INDEX.

List of sub-headings :—CABLE(S), CITY NOTES, CONTRACTS OPEN AND CLOSED, CORRESPONDENCE, ELECTRIC(AL), ELECTRICITY, ELECTRICITY WORKS, ELECTRIC LIGHT AND POWER NOTES, ELECTRICITY SUPPLY ACCOUNTS, ELECTRIC TRAMWAY ACCOUNTS, LEGAL, NEW COMPANIES, OBITUARY, OFFICIAL RETURNS, PARLIAMENTARY, PROSPECTUSES, RAILWAY(S), REVIEWS, SOCIETIES AND INSTITUTIONS, TELEGRAPH NOTES, TELEPHONE NOTES, TRACTION NOTES.

ABATEMENT, Smoke, 367
Abraham, A. J., on The central station battery, 448
Accidents on the L. & Y. Railway, 685
" 270, 312, 318, 551
Accumulator factories, 903
Advertise, Why engineers should, by G. H. Gibson, 439
Air calorimetry, The testing of electric generators by, by R. Threlfall, 967
Alternating current generators at Preston, 688
" current motors for variable speed, 209
" current motors, Progress in, 202
Alternators, Parallel running of, 866, 567
" The testing of, 969
Aluminium as an electrical conductor, by J. B. C. Kershaw, 450
" conductors for electric transmission lines, by J. B. C. Kershaw, 678
American electric central stations, 397
" electrical exports, 580
" Institution of Mechanical Engineers, 915
" Mechanicals, 915
" municipal failure, 666
" Street Railway Association, 886
" view of the Protection proposals, 871
" workman from an English workman's point of view, 478
Ammeters and voltmeters, Edgewise, 141
Anchor Cable Co., Callenders buy up the, 151
Aniline dye trade, 184
Appleyard Conductometer, 60., 620
" R., on the Electrical conductivity of copper, 3, 77
Appliances, First aids and, by J. D. McGowan, 575, 614
Applied chemistry, Berlin, June, 1903. The Fifth International Congress for, 87
Appointments vacant, 259, 271, 312, 352, 392, 472, 511, 631, 669, 751, 792, 831, 871, 916, 997
Arc lamps, Hot wire enclosed, by H. Tomlinson-Lee, 173
" lamps, Westinghouse-Bremer, 200
" lighting in Willesden and Hampstead, 758
Arco, Count, on A new method of tuning wireless telegraph stations by means of the multiplier, 399, 437, 482
Assistant's point of view, The chief, from an, by "R. V.," 611
Association of Electrical Contractors, 775
Asynchronous machinery, Compounded, by G. Hooghwinkel, 122, 128, 167
Atlas motors, 880
Atoms, The constitution of, 41
Australia, Electric pumps for, 300
" Electrical work in, 199
Australian Federation Patent Bill, 482
" patents, 945
Autocrat, Modern, 847
Automatic signal, Harison patent, 723
" signalling, 268
" signalling on the District Railway, 421
Automobile as an income producer for central stations, The electric, 822
" trials, 433
Automobiles, Edison accumulator for, by W. Hibbert, 883, 921
Auxiliary plant, Central station, by F. H. Davies, 495
Avebury (Lord) and the L.C.C., 84

BALLISTIC galvanometers, Design and working of, by P.H. Powell, 492
Bankruptcy proceedings, 31, 55, 95, 178, 218, 260, 307, 382, 427, 461, 619, 661, 738, 818, 861, 903, 946, 986, 1035
Bastian meters, 461
Battery, The central station, by A. J. Abraham, 448
" central station, by R. R. Vicarey, 679
" Edison, 847
Battleships and universities, 405
Bell, Dr. Louis, on Speed and public safety, 332
Belts, Electric, 631
Benham & Froud, Ltd., New works of, 811
Berlin and Sandy Point, 413
" high speed railway trials, 591, 799
" international congress for applied chemistry, 37
" underground railway and the Paris disaster, 873
Bexley electric lighting and tramway undertaking, 583, 592
Birmingham electric power transmission plant, A, 750
Birthday honours and science, 767
Blast furnace gas engines, 389
" furnace gas power plant in Ilseder Iron Works (Germany), 907
Bleaching solutions, Two new forms of electrolytic cell for production of, by J. B. C. Kershaw. 1015
Bloch, Marcel, on The congress of the "Houille Blanche," 402, 505
Bloemfontein, Three-phase alternators for, 74
Blondel-Carpentier hysteresimeter, 579
Board of Trade suggestions *re* tramways, 980
" of Trade inquiry *re* Ramsgate tramcar accident, 333
" of Trade on nursing, 441
Boiler covering composition, 381
" design and construction, 708
" testing, Experimental, 66
Boilers, Management and working of, by Horace Boot, 160
" Navy, 106
Bolsover colliery installation, 619
Bolt stresses, 66
Bolton top cover for electric cars, 422
Boot, Horace, on Management and working of boilers, 160
Booth, W. H., on Compression in the gas engine, 297
Borough Council elections, 643
Bradford, New works at, 539
" Corporation electrical undertakings, Recent extensions of the, 991, 1030
Brake, Emergency, 533
Brakes, The relative importance of lifeguards and, 518
Bramwell, The late Sir F., 900, 960
Brighton tramways committee and the provision of trucks, 750
British Association meeting at Southport, 349, 432, 449, 559, 597, 637, 676, 797, 839, 965, 1005
" exports of electrical machinery, 497
" industries and foreign competition, 89
" race, Physical condition of the, 205
British trade with Canada, 259
" v. foreign tenders at St. Pancras, 472
Broadbent, F., on Economical speed regulation with continuous current motors, 802
Broadness of the electrical engineering profession, by E. K. Scott, 803
Brotherhood engine works, 343
Brühl, P., on the Preservation of instruments and machinery in Bengal, 317, 358, 401
Brussels electric tramways, 742
Building fund, The I.E.E., 166, 207
Burnley Union workhouse lighting, 488
Burton electric lighting and tramways, 947
Business, Pleasure of, 646

CABINET changes, 485
CABLE(S)—
American, 588
Atlantic, 470
American Pacific, 63, 347
Cocos Island to Ceylon, 182
French submarine, 63, 869
Japan and the Sandwich Islands, 149
Laid on ground, 869
New American, 588
" Zealand, 706
Pacific, 263, 502, 627, 822, 988
Pacific cable rate, Partition of the, 182
Transvaal, 340
Cables, High tension, and overhead transmission, by C. C. Garrard, 247
Tests on broken, Some inconsistencies in localisation formulæ, by E. Raymond Barker, 250
Calculator board, 431
" board and graphic methods, 329
" board, Practical examples with the, by E. Raymond Barker, 652, 721, 759, 857
Callis, F. T., on Notes on engine driving in electric light stations, 970, 1003
Camborne and Redruth tramway, 1035
Canadian Patent Law, 620
Canal project, A new, 151
Cancer and Röntgen rays, 872
Cape Town Exhibition, 790
Car, A new English, 886
" -building, A detail in, 728
" construction, Improvements in, 104
" controllers, 567
" tests, Inter-urban, 481
" which passengers enter and leave at the same time, 508
Carbide, The consumption of calcium, 997
" The impurities of commercial calcium, 473
" of tungsten and chromium, A double, 997
Carbon electrodes, 351
Carbons, British made, 1029
Carborundum as a furnace lining, 351
" Siloxicon and, 312
Carriage of merchandise on electric tramways, by Thomas Upton, 251, 291, 333
Cast-iron for piston rings, by C. H. Wingfield, 563
Cell, Edison, 847
" Jone's new primary, 1014, 1019
Cellular switchgear for the Colonies, 563
Central electric power stations for gold mines, 239
" station, An oil engine, by H. S. Knowlton, 360
" station auxiliary plant, by F. H. Davies, 495
" station battery, by A. J. Abraham, 448
" station batteries, by R. W. Vicarey, 679
" station economies, The utilisation of condensed steam, by G. R. Parkinson, 976
" station engineer 27, 66, 107, 152, 186, 271, 313, 352, 392, 432, 473, 511, 551, 592, 631, 669, 709, 752, 792, 832, 874, 916, 960, 998, 1040
" stations, The automobile as an income producer for, 322
Chamberlain's, Mr., scheme and the engineering trades, 26
Chamen, W. A., on The possibilities of future economies in electrical illumination, 162
Cheap and satisfactory construction, by "A. H. M.," 466
Chemical point of view, Fuel economy from the, 931
Chemistry, Berlin, The fifth international congress for applied, 37
Chief, from an assistant's point of view, The, by "R. V.," 611
Chlorine smelting with electrolysis, 120
Church lighting, 218
Circular and figure 8 trolley wire combined, 874
City and Guilds of London Institute, 915
" and South London Railway, Working results of the three-wire system applied to traction, by P. V. McMahon, 1050
CITY NOTES—
Allgemeine Elektricitäts Gesellschaft, 917
Anglo-American Telegraph Co., 154, 191, 233, 554
Arc Lamps, Ltd., 1000, 1042
Aron Electricity Meter, 918, 1000
Baker Street and Waterloo Railway, Co., 274
Birmingham and Midland Tramways, 1042
Blackheath & Greenwich District Electric Lighting Co., 314
Blackpool, St. Anne's and Lytham Tramways Co., 1002
Brazilian Mineral Syndicate, Ltd., 1002
Bristol Tramways and Carriage Co., 193
British Aluminium Co., 29, 67, 672, 712, 754, 876
Columbia Electric Railway Co., 711, 754, 1042
" Columbia Telephones, 672
" Electric Traction Co., 29, 110, 962, 999
" Insulated & Helsby Cables Co., 354
" Thomson-Houston Co., 188
" Westinghouse Electric and Manufacturing Co., 478, 1041
Brompton & Kensington Electricity Supply Co., 234
Bruce Peebles & Co., 70
Bullers, Ltd , 918
Bury, Rochdale & Oldham Tramway Co., 513
Calcutta Electric Supply Corporation, 515
Callender's Cable and Construction Co., 672

106019

CITY NOTES—*continued.*
Cape Electric Tramways, 80, 753, 876, 1002
„ Town Consolidated Tramway and Land Co., 554
Castner-Kellner Alkali Co., 894
Central London Railway, 192, 232, 513
Charing Cross and Strand Electricity Supply Corporation, 30, 234
Chili Telephone Co., 68, 152
Chilian Electric Tramway and Light Co , 594
Chloride Electrical Storage Co., 478, 513
City & South London Railway Co., 112, 153, 189
„ of Buenos Ayres Tramways Co., 594, 1012
„ of London Electric Lighting Co., 30
Commercial Cable Co., 963
Companies struck off the Register, 835
County of London and Brush Provincial Electric Lighting Co., 192
Crompton & Co., 192, 231
Cuba Submarine Telegraph Co., 634, 670
Dick, Kerr & Co., 514, 553
Diesel Engine Co., 70
Direct Spanish Telegraph Co., 514
„ United States Cable Co., 112, 154, 190, 594
„ West India Cable Co., 514, 554
Douglas Southern Electric Tramways Co., 1000
Dowsing Radiant Heat Co., 70
Drake & Gorham, Ltd., 671
Dublin and Lucan Electric Railway Co., 274, 354
„ United Tramways Co. (1896), 188
Eastern Extension, Australasia and China Telegraph Co., 554, 794, 875, 1002
„ Telegraph Co., 154, 188, 554, 1002
Edison and Swan United Electric Light Co., 712, 793
Edmundson's Electricity Corporation, 153, 190
Electric and General Investment Co., 29, 109, 962
„ Construction Co., 30, 69, 111
„ Railway and Tramway Carriage Works, 434, 554
„ Welding Co., 274
Electrical Power Storage Co., 28, 109
Electricity Supply Co. for Spain, 513
Electrolytic Alkali Co., 594, 634
Elmore's Trust, 474, 553
Evered & Co , 514
Ferranti, Ltd., 834
Folkestone Electricity Supply Co , 514
General Electric Co , 154, 191
Globe Telegraph and Trust Co.. 112, 672
Great Northern and City Railway Co , 192, 233
„ Northern, Piccadilly and Brompton Railway Co , 233
Greenwood & Batley, 29, 69
Hadfield's Steel Foundry Co., 354
Halifax and Bermudas Cable Co., 514, 554
Harrow Electric Light and Power Co., 274
Henley's Telegraph Works Co., W.T., 314
Hiram Maxim Electrical and Engineering Co., 474
Hornsby & Sons, R., 876
Hove Electric Lighting Co., 514
Imperial Tramways Co., 314
India-Rubber, Gutta-Percha and Telegraph Works Co., 962, 1000
Indo-European Telegraph Co., 634
Isle of Thanet Electric Tramways and Lighting Co., 1001
Johnson-Lundell Electric Traction Co., 1041
Kalgoorlie Electric Power and Lighting Corporation, 670
Kent Electric Power Syndicate, 274
Lancashire Electric Power Co., 273
Lanchester Engine Co., 672
Liverpool Overhead Railway Co., 192, 232, 273
London Electric Supply Corporation, 314
„ United Tramways, 274
Mather & Platt, 354, 394
Mersey Railway Co., 553
Metropolitan District Railway Co., 233, 273, 1041
„ Electric Supply Co., 192
„ Railway Co., 232
Monte Video Telephone Co., 671, 754
National Gas Engine Co , 192
„ Telephone Co., 111, 180
Nernst Electric Light, 962, 1001
New Century Arc Light Co., 473
„ General Traction Co., 68
„ Gutta-Percha Co., 1001, 1041
Norwich Electric Tramways Co., 711
Oriental Telephone and Electric Co., 672
Parker, Thomas, 30, 69, 110
Power Gas Corporation, 875, 962
Primitiva Gas and Electric Lighting Co. of Buenos Ayres, 314
Provincial Tramways Co., 1000
Rand Central Electric Works, 28
Rosario Electric Co., 712, 754
St. James's and Pall Mall Electric Light Co., 70, 112
St. Helens and District Tramways Co., 796
Salisbury Electric Light and Supply Co., 554
Scarborough Electric Supply Co., 1042
South Lancashire Electric Traction and Power Co., 110, 634, 834
„ London Electric Supply Corporation, 192, 672
Stock Exchange notices, 70, 112, 154, 354, 394, 434, 514, 554, 594, 634, 672, 712, 794, 834, 876, 918, 962, 1042
Telegraph Construction and Maintenance Co., 70, 111
Tyneside Tramways and Tramroads Co., 354
Ulster Electrical Power and Distribution Co., 711
Underground Electric Railways Co. of London, 671
United River Plate Telephone Co., 109
Urban Electric Supply Co., 29, 69
Waterloo and City Railway Co., 192, 273
Waygood & Co., R., 1002
West India and Panama Telegraph Co., 754, 794, 883
Western Telegraph Co., 672, 711, 753, 918
„ Union Telegraph Co., 554
Westminster Electric Supply Corporation, 192
White & Co., J. G., 28
Widnes and Runcorn Bridge Co., 232
Willans & Robinson, 549
Yorkshire Electric Power Co , 513

Coal-cutting machines with three-phase motors, 425
„ feeder for gas works, An electrical, 1033
„ scales for power stations, 530
Cockerill, Ltd., The works of Messrs. John, 185
Colliery installation, Continental, 523
„ managers and electricity, 825
Combustibles, Drying, 767
Commercial calcium carbide, The Impurities of, 473
Committee Room, Loafing at Westminster, 913
Commutation under oil, 926
Competition, British industries and foreign, 39
Compounded asynchronous machinery, by G. Hooghwinkel, 122, 128, 167
Compressed air cleaning for electric lighting and power stations, 380
Compression in the gas engine, by W. H. Booth, 297
Compulsory purchase and the land, 751
Condensed steam, The utilisation of, Central station economies, by G. R. Parkinson, 976
Condensing turbines, Utilising exhaust steam in, 312
Conditions in copper refining, Most economical, 680
Conductivity of copper, The electrical, by Rollo Appleyard, 3, 77
Conductometer, Appleyard, 601
Conductors for electric transmission lines, Aluminium, by J. B. C. Kershaw, 678
Conduit v. trolley system, 53, 90
Conduits, A novelty in underground, 960
Congress of the "Houille Blanche," by Marcel Bloch, 402, 505
„ Trades Union, 448
Conservatoire des Arts et Metiers, 685
Consideration of some points in the design and working of ballistic galvanometers, by P. H. Powell, 492
Constitution of atoms, 41
Consulting engineer, Legal position of the, 930, 934
Consumption, Radio-activity and the cure of, 206
Continental colliery installation, 523
„ electrical engineering industry, 201, 328, 481, 651
Continuous-current motors by shunt control, Speed variation of, by H. M. Hobart, 926
„ rails, 847
„ working, 229

CONTRACTS CLOSED—
Aberdeen, 707, 789
Aldershot, 471
Ashton-under-Lyne, 822
Aston Manor, 549, 693
Barnsley, 24
Barnstaple, 589
Bath, 870
Batterses, 64, 912
Belfast, 822
Belgium, 628
Bermondsey, 64, 589
Bexhill-on-Sea, 589
Blackpool, 906 959
Bolton, 100, 430, 707
Bootle, 848, 789
Boston, 665
Bradford, 100, 150, 628, 707
Brighton, 150, 508, 707, 870, 912, 959
Bristol, 590, 707, 959
Bromley, 789
Bury St. Edmunds, 311
Cardiff, 1037
Cheadle, 471
Chiswick, 431
Colchester, 64, 100, 311
Coventry, 100
Darlington, 549
Dartford, 549, 870
Delagoa Bay, 100
Derby, 24, 227, 311

CONTRACTS CLOSED—*continued.*
Devonport, 707
Dewsbury, 549, 590
Doncaster, 665
Dundee, 590
East Ham, 989
Eccles, 268
Epsom, 590, 748
Falkirk, 431
Faversham, 24, 1037
Felixstowe, 64
Foyers, 789
France, 24, 100, 348, 390, 471, 508, 665
Fulham, 665
Gatley, 471
Gillingham, 549
Glasgow, 471, 665
Gloucester, 64, 105, 227, 912
Gravesend, 628, 912, 989
Grimsby, 471, 628
Hackney, 508, 707
Halifax, 390, 748, 1037
Hamilton, 989
Hammersmith, 100, 150, 508, 665
Hampstead, 150
Hastings, 290, 959
Heckmondwike, 24
Heston, 269, 311
Holland, 648
Hong Kong, 789
Horsham, 628
Houghton-le-Spring, 100
Hove, 311
Hull, 748, 1037
Ilford, 748, 912
Ilkeston, 24
Ipswich, 549, 1037
Isleworth, 269, 311
Islington, 64, 100
Johannesburg, 311, 822, 989
Kettering, 24
King's Norton, 471, 707
Kingston-on-Thames, 228, 823
Kirkcaldy, 628
Launceston (Tas.), 24
Leeds, 870
Leicester, 25, 228
Leigh, 105, 269
Leith, 64
Lincolnshire, 228
Littleborough, 105
Liverpool, 430, 628
Llandilo, 105
London, 64, 105, 150, 549, 590, 628, 749, 822, 912, 1037
Lowestoft, 989
Maidenhead, 105, 628
Maidstone, 471, 989
Manchester, 105, 550, 630
Metropolitan Asylums Board, 431, 590, 912
„ and District Railways, 348
Middlesbrough, 150
Middlesex, 912
Nelson, 748
Newcastle-under-Lyme, 590, 665
Northampton, 1038
Northfleet, 822
North Wales, 269
Paisley, 590, 628, 912
Penang, 269
Poplar, 431
Portsmouth, 269, 1038
Preston, 748, 789
Radcliffe, 150, 665
Reigate, 590
Rochdale, 64, 590, 665
Roumania, 150
Rugby, 471
St. Helens, 789
St. Pancras, 150
Salford, 959
Scarborough, 590
Sheffield, 628, 707
Shoreditch, 913
South America, 471, 749
Southampton, 150
Southend, 707
Southwark, 550
Spain, 628
Stalybridge, 590
Stepney, 65, 550, 707
Stoke-on-Trent, 25, 590
Sunderland, 311, 471, 1038
„ and District tramways, 913
Sutton, 590
Swansea, 25, 959, 989
Swindon, 629, 959
Sydney, N.S.W., 830
Todmorden, 959
Twickenham, 431
Tynemouth, 550
Walsall, 471, 508, 989, 1038
Wandsworth, 590
War Office, 508, 665, 959
Wednesbury, 959
West Ham, 105, 588, 870
Westminster, 789
Weymouth, 650
Whitehaven, 822, 999
Wigan, 870
Willesden, 150
Wolverhampton, 228, 749
Wood Green, 749
Yarmouth, 989
Yoker, 25

CONTRACTS OPEN—
Aberdare, 24
Army contracts, 589
Aston Manor, 268
Atherton, 100
Barrow-in-Furness, 706
Bath, 24, 100
Batley, 24
Battersea, 989
Beckenham, 628, 665
Belfast, 1037

CONTRACTS OPEN—*continued.*
Belgium, 100, 188, 227, 268, 348, 390, 502, 589
Bermondsey, 390, 706, 906
Bexley, 227, 268
Birkenhead, 100
Blackburn, 64
Blackpool, 470, 706
Bridgend and Cowbridge, 628
Brierley Hill, 823
Brighton, 149, 227, 430, 748
Brisbane, 348, 390
Canterbury, 958
Ceylon, 748
Chorley, 665
Colne, 64
Crewe, 629
Croydon, 390
Cuba, 390, 430
Dartford, 748
Derby, 24
Devonport, 628
Dorchester, 311, 7
Dublin, 748, 789
Edinburgh, 149, 268
Enniscorthy, 906
Epsom, 748
Erith, 906
France, 24, 188, 227, 390, 470, 958, 989
Germany, 227, 268, 789
Glasgow, 706, 748
Govan, 906
G.W.R., 549, 748, 789
Greece, 348
Grimsby, 227, 268
Guadeloupe, 24, 227, 268
Hackney, 958
Halifax, 188, 587
Hammersmith, 24, 64
Harrismith (O.R.C.), 502, 958
Harrogate, 706
Holland, 188, 227, 268, 990
Hornsey, 748
Hungary, 24, 227, 268
Ipswich, 24, 311
Irvine, 989
Isle of Thanet, 430
Italy, 502, 789, 822, 870
Johannesburg, 348, 430
Kettering, 989
Kilmarnock, 589
King's Norton, 502, 870
Kirkcaldy, 430, 748
Lanark, 1037
Launceston (Tas.), 24, 227, 268
Leeds, 100, 227, 549
Leek, 24
London, 64, 150, 227, 268, 430, 549, 789 822
Maesteg, 748
Manchester, 471, 706
Merthyr Tydfil, 390
Middlesbrough, 24, 789
Nelson, 589
Newport (Mon.), 64, 789
New South Wales, 24, 227, 268
Northampton, 188, 227, 268
N.E. Railway, 8.0
Norwich, 24
Oldham, 958
Paris, 589
Pietermaritzburg, 24, 268, 311
Plymouth, 748
Pontypridd, 906
Poplar, 24, 64
Portugal, 24, 227, 390, 589
Preston, 64
Radcliffe, 311, 665
Reigate, 390
Rochdale, 100, 150, 227, 390
Roumania, 430
St. Asaph, 64
St. Pancras, 24
Saltburn, 24
Servia, 24
Sheffield, 64
Southend, 348
Spain, 24, 64, 100, 150, 268, 348, 502 549, 589, 665, 706, 958, 989, 1037
Stepney, 24
Stockport, 150 188, 900
Stockton-on-Tees, 906
Stoke-upon-Trent, 311
Swansea, 502
Sweden, 390, 502, 748
Swindon, 64, 183, 227, 268, 589, 706, 748
Sydney, N.S.W., 706, 789, 958
Tiverton, 64
Todmorden, 589
Trimdon Grange (Durham), 870, 906
Turkey, 311
Wallasey, 989
Warrington, 906
Wednesbury, 100, 665, 789
West Ham, 24, 183, 227, 268
Weymouth and Melcombe Regis, 24
Whitechapel, 348
Whitehaven, 748, 789
Wimbledon, 822

Contractors' Association, The Manufacturers' and, 1036
Controllers, Car, 667
Co-operative Ironworks at Guise, France, 510
Copper, The electrical conductivity of, by Rollo Appleyard, 3, 77
„ refining, Most economical conditions in, 680

CORRESPONDENCE—
Aberglaube, by "T.," 536
Aluminium, by J. B. C. Kershaw, 493
American discovery, by "Arcturus," 733
An aspect of the Fiscal question, by "F.," 534
„ early start, by H. W. Bramley, 858
„ interesting letter, by "Consulting Engineer," 709

CORRESPONDENCE—*continued.*
Applicants please note, by "Selection," 857; by "Unanswered," 899
Arc lamp litigation.—Jandus Arc Lamp and Electric Co., Ltd., *v.* Arc Lamps, Ltd., by Arc Lamps, Ltd., 898
Aston meter specification, by J. Ansell, 537
Automatic fire alarms, by E. Guarini, 400, 654; by Geo. W. Oatway, 536
" ticket issuers, by "Long John," 777
Brighton tramways extensions, by M. Hill, 1022
British industries and foreign competition, by "Anti-Protectionist," 51, 91
Broadness of electrical engineering, by Charles Bright, 856
Calculator board, by E. Raymond-Barker, 420
Capping oasing, by "Worried," 595
Carnaby *v.* Neale and the South-Western Electrical Co., by Savory, Pryor & Blagden, 419
Central station battery, by "Electrolyte," 701, 814; by A. J. Abraham, 733; by H. S Pursey, 777; by "All Gassing," 777; by "Harry R.W.," 814
Cheap labour, by "S. C. M.," 900
Coal scales for power stations, by F. A. Yerbury, 573
Cobden Club and foreigners, by Harold Cox, 11
Constitution of atoms, by Oliver Lodge, 92
Corrosion of bare overhead wires, by "Werdna," 421
Curious earth readings, by "W. M.," 572
Design of ballistic galvanometers, by P. H. Powell, 613
" of direct current machinery, by "Willing to Learn," 900; by V. A. Fynn, 940; by H. J. Robinson, 941; by G. N. Thomas, 981
" of variable speed motors, by J. N. Dodd, 936; by W. B. Hird, 979
Determination of iron loss and friction, by A. Press, 421
Development of the current interrupter, by Mortimer Codd, 177; by A. W. Isenthal, 214; by W. G. Steinthal, 255
Device for tightening vertical belt, by H. J. Kitchen, 935; by E. Norman Rogers, 1021
Dissolution of matter by matter, by "Unprejudiced," 52
Dry bells; Patent Exploitation Co.'s litigation, by "Correspondent," 613
Earth finding, by G. C. Knight, 336
Economical speed regulations with continuous current motors, by A. F. Hemingway, 1022
Edison *v.* lead accumulator, by "One Who Has Worked in K.H.O. Solutions," 1024
Electric car drivers, by "Manager," 294; by "Driver Quick-Stop," 337
" conductivity of copper, by Rollo Appleyard, 258
" drills, by T. C. Futers, 376
" heating of railway carriages, Donati Tommasi, 813
" pumping for mines drainage, by "C.," 735
" rock drills, by C. A. Fox, 296; by the Sandycroft Foundry Co., 337, 421
" shocks on flat back switchboard, by "H. W. C.," 854; by Percy B. Hall, 899; by P. B. Palmer, 937; by "Enquirer," 981
" tunnel danger, by W. T. Glover & Co., 294
" welding, by "Welder," 735
Electrical contractors and manufacturers, by E. F. Moy, 941, 1025
" manufacturers' and contractors' agreement, by T. Guthrie and W. Davenport, 1025
" persecution, by "Visitor," 857
Electrically-driven road vehicles, by R. E. Crompton, 176
Electricity in India—a correction, by "X. Y. Z.," 855
" in mines, by Adolphus B. Croft, 11; by Land and Sea Cable Works, Ltd., Nippes—Cologne, 138
" *v.* gas, by "College Court," 493; by R. J. Nicholson & Co., 594
" the scapegoat, by F. W. E. Jones, 1022
Electro-galvanising, by "W. Z.," 700
English porcelain insulators, by W. Rooper, 376; by J. T. Harris, 376, 458; by C. C. Garrard, 419, 457
Entropy, by R. H. Smith, 297
Existence of ether, by George Nairn, 336
Failure of wireless telegraphy in Somaliland, by Marconi's Wireless Telegraph Co., Ltd., 53
Fair trade? by "Fiscaliteur," 895; by "B.M.I.E.D.," 935
Faults on mains, by J. C. Stewart, 375
Fiscal policy, by J. E. Cuthbertson, 337
" policy, Our, by "A Man of no Experience," 256; by Geo. Barham, 295
Free trade or ——? by "Free Trader or ——?" 51
" trade zones in Italy, by Harold Cox, 211
Fuse wire, by N. C. Woodfin, 52; by W. Macdonald, 177
Fynn patents, The, by Phœnix Dynamo Mfg. Co., 940
Garuti process, by Siemens Bros. and Co., 420
Gas engines for power stations, by W. J. U. Sowter, 572
Greatest electric shock on record, by "F. C. K.," 375; by W. da F. B. Davids, 777
Groundless fears, by G. E. Heyl-Dia, 894, 942
Heating capacity of electric radiators, by the British Prometheus Co., 857, 941, 1023; by Electric and Ordnance Accessories Co., 899, 979; by Falk, Stadelmann & Co., 1023
Hot-wire arc lamps, by "N. D. W.," 215; by "C. M.," 255; by Foster and Co., 255, 338, 378; by H. Tomlinson Lea, 256; by "Fair Play," 338; by V. A. Mundella, 338; by W. J. Woodward, 378; by "J. G.," 378; by "A. J. C.," 378; by "Enclosed," 378
I.E.E. building fund, by D. R. Broadbent, 214; by "A.M.I.E.E.," 214
International Fire Prevention Congress, by E. Guarini, 212
Iron piping or wood casing? by Frank Broadbent, 138
Jointless section induction coils, by Leslie Miller, 700, 778, 813; by A. W. Isenthal, 735; by Alfred Apps, 779, 857
Justified wail of a junior, by "Junior," 813
Latest dodge in dumping, by "An English Battery Maker," 855
"Lighting," by A. J. Hodgson, 176
Loading and unloading cars at termini by "(Experienced), tramway manager," 294
L.C.C. engines, by "W. H. B." 537, 571; by "H. J. A.," 612
Main line electric traction, by "Multiple Supply," 812; C. H. R. Thorn, 855
Motorman instructor's views, by "Driver Quick-Stop," 254
Multiple supply system patents, by "Multiple Supply," 900; by C. H. R. Thorn, 937
Municipal problems, by A. E. Hewett, 942
New form of traction clutch, by H. S. Hele-Shaw, 419
Packing of goods for abroad, by "Packer," 1023
Parallel running of alternators, by B. Hopkinson, 876; by H. C. Leake, 896
Presidential address and the Edison battery, by David Smith, 854
Priority in oil break switches, by Ferranti, Ltd., 533
Protection: A reply to Mr. Byng, by J. S. Vincent, 458
" or Free Trade? By "A Fearless Free Trader," 137; by E. P. Allam, 138; by G. Byng, 174, 214; by "A.I.E.E.," 257
Qualifications of technical teachers, by "A.I.E.E.," 92
" of teachers of engineering, by "H.," 452
Ramsgate tramcar accident, by "Air and Sand," 377, 400; by Norman D. Cameron, 377, 419
Record, The, by "Turris," 854
" in electric generators, by E. Guarini, 92
Refuse destructors and electricity works, by W. P. Adams, 855, 900
" destructors and power production, by W. P. Adams, 421
Regulation of traffic at tramway termini, by "T. St. M. E.," 212
Salaries of municipal officers, by "Desideratum," 1023
Shunt losses in meters, by Wm. C. Anderson, 12
Single-phase alternate current motors, by Val. A. Fynn, 654, 735; by L. Schüler, 700, 775; by Wm. Cramp, 775
" phase traction, by Dr. G. Finzi, 897
Small high speed motors, by "J.S.," 1021
Smoke abatement, by E. A. S. Daniell, 418, 458, 572; by H. H. B. Deane, 493, 700; by R. Ashworth, 535; by W. Banks, 572
Snell's (Mr.) presidential address, by John F. C. Snell, 176
South African affairs, by "M.I.E.E.," 983
Speed and public safety, by R. E. Crompton, 379; by J. F. Woodhine, 379; by A. A. C. Swinton, 418
Steam turbo-generating plants, by Belliss & Morcom, Ltd., 734, 853, 939; by Geo. Wilkinson, 779, 895, 983; by J. H. Barker, 779, 815, 894; by C. H. R. Thorn, 937; by Henry Lea, 938; by H. N. Thomas, 938, 983, 1022; by A. A. Campbell Swinton, 938; by "A Student," 939
Street improvements and municipal tramway accounts, by E. K. Scott, 53
Switchboard attendants, by "High Voltage," 458
" attendants are cheap to-day, by "10,000 Volts," 337; by "H. T. C. C.," 420
Switchman or premium pupil, by "P. P.," 375
Tangential traction, by E. Guarini, 458, 536
Technical instruction, by "T. R.," 814; by "Arc," 855, 936; by W. L. Turner, 898, 980
Trade Marks, by Josh. Crosfield and Sons, Ltd., 337
Underground railways and fire, by "Electromotive," 337
Unique steam engine, A, by A. S. E. Ackermann, 534
Variable speed continuous current motors, by G. Ralph, 814; by F. Broadbent, 897; by Frederick J. Thompson, 937; by Ed. Eberwein, 981
Walsall switches, by Richardson and Co., 936
" Electrical Co., 981
Wanted: An ideal electric glow lamp, by W. Young, 613
" A good commercial incandescent lamp, by "H. H. M.," 296; by Lawrence & Co., 418
Waste of energy in tendering, by A. Bloemendal, 700; by "R. A.," 734, 812; by Duncan Watson, 734; by Handcock & Dykes, 777, 941; by W. R. Rawlings, 777; by E. J. Hogan, 856; by "X," 896; by Rashleigh Phipps & Co, 980; by W. Davenport, 980; by Edward H. Welch, 980
What are we coming to? by "M-arc-us," 898
Winding induction coils, by F. H. Hadfield, 654
Wireless telegraphy, by W. H. Bentley, 698; by M. E. Stone, 698; by Marconi's Wireless Telegraphy Co., 736
Wiring specifications, by "Wiring Contractor," 11, 92; by Morton B. Cotterell, 53; by R. E. Dixon, 138
Working of the maximum demand system, by H. M. Hoyles, 981; by "R. A.," 1024

Cottrell, S. B., on Overhead and other railways, 35
Cramp, W., on Single-phase repulsion motors, 490, 559
Critical speed of steam turbines, 576
Crompton, Col., on Street traffic problems, 449
Crookes, Sir William, on Modern views on matter; the realisation of a dream, 115, 157
Cruse controllable superheater, 1007
Curious specification, 882
Current interrupter, The development of the, by J. Wright, 49, 127, 204 207

DARLINGTON'S folly, 8
Davies, F. H., on Central station auxiliary plant, 495
Decimal system, 916
Defence: Gas-pipe *v.* copper, by C. A. Smith, 891
Depreciation, 666
" A question in, 845
" Newcastle tramways and the question of, 169
Design of direct-current machinery, by Val. A. Fynn, 808, 848, 932, 1047
Destruction and power production, Refuse, 365
Destructor and electricity stations in small towns, 807
" and forced draught system, The Horsfall refuse, 168
" Grimsby's refuse, 65
Destructors at Nottingham, 661
Detail in car-building, 728
Determining the moment of inertia of the armature of a dynamo, 228
Development and use of the small electric motor, 277
of the current interrupter, by J. Wright, 49, 127, 204, 207
Devices and fittings for the current electric lighting season, 517, 615, 654, 695, 730, 772, 911
Diesel engine, 184
Dinner of the I.E.E., 1009
Direct-current machinery, Design of, by Val. A. Fynn, 808, 848, 932, 1047
pressures and standard frequencies, Standard, 904
Discoveries, electro-chemical, 357
Dissolutions, 13, 55, 95, 141, 259, 307, 391, 467, 498, 580, 708, 739, 818, 860, 946
Disturbances, Magnetic, 472
Docks, The modern equipment of, with special reference to hydraulic and electric appliances, by W. Pitt, 35
Draught, Mechanical, 277
Drawing office equipment, 629
Drying combustibles, 767
" peat electrically, 829
Durban (S.A.) electric light and tramways, 953, 994
Dynamics of electrons, 526
Dynamo and engine breakdowns, 717
" brushes in America, 497

EARL'S COURT, Fire exhibition at, the G.E.C. exhibit, 216
East London (Cape Colony), Fatal accident at, 891
Economical speed regulation with continuous current motors, by Frank Broadbent, 802
Economies in electrical illumination, The possibilities of future, by W. A. Chamen, 162
Edison accumulator for automobiles, by W. Hibbett, 883, 921
" battery, 229, 432, 508, 718, 847
Education and science, 799
" in the United States, Engineering, 565
Efficiency of a four-valve Fleming engine, 997
Elections, Borough Council, 648

ELECTRIC(AL)—
Car construction, Board of Trade and 373
Cars, Speed of, 750
Companies and the law of negligence 642
Conductivity of certain aluminium alloys as affected by exposure to London atmospheres, by E. Wilson, 451
" of copper, The, by Rollo Appleyard, 3, 77
Continental engineering industry, 651
Contractors' Association, 775
Economies in illumination, The possibilities of future, by W. A. Chamen, 162
Engineers at one guinea each, by T. C. Futers, 415
" Royal (Volunteer) N.C.O.'s mess dinner, 913
Enterprise in Italy: reported action of English companies, 708
Exhibition, 423
Exhibits at St. Louis, 867
Fire bogie, 845
Furnaces, 298
Generators by air calorimetry, The testing of, by R. Threlfall, 967
Gold dredging, 790
Heating of trains, 997
Industry, German, 54, 232, 379, 540, 818, 948
Installations in India, 600, 830
Machinery exports, 339
Mine locomotives, 230
Motor, The development and use of the, 277
" vehicles, 258, 871
Motors for centrifugal pumps and pits, 667
News from Japan, 860
" from Mauritius, 870
Outlook in Germany, 456
Peat drying, 829
Power in paper mills, 422
" stations, 915
Progress in the nineteenth century, 790
Promotions—session 1904, 892
Pumping for irrigation, by E. K. Scott, 496
" in collieries, 218
" plant at Dortmund, 623
" plant for De Beers Consolidated Mines, Kimberley, 771
Pumps for Australia, 300
Railways in Europe, 529
" possibilities in South Africa, 874
" progress, 525
Resistance furnaces, 629
Rock drills, by T. C. Futers, 278
Safety Dress, 220, 258
Signalling, 592
Stations, Fuel economy in, by H. McLaren, 319
Time stamps, 945
Traction on railways, 765
Tramway matters, 278
Tramways, Carriage of merchandise on, by, T. Upton, 251, 291, 368
Typewriters, 965
Vehicle trials in France, 551
Vehicles, 661
Volunteers, 666, 871
Welded joints, 871
Welder for wire hoops, Automatic, 33
Work and workers in South Africa 312, 930

Electric traction, Statistical review of, 725
E.C.A., Proposed model wiring specifications, 744
Electrically-driven machine tools, 527
" equipped factory in Germany, 195

ELECTRICITY—
Cleaning works, Frictional in, 1040
Direct from coal, 708
Electrons and atmospheric, 838
For small hospitals, by W. Noble Twelvetrees, 657
v. gas, 431
In gas works, 851, 903
Manufacture of iron and steel, in the, 997
In India, 473, 508
Mines drainage, for, 645
" in, by T. C. Futers, 237, 362
" in, 106, 186, 239
On the farm, by E. Guarini, 410
Radium as a generator of, 931
Sub-division of power by, 630
Stripping brass from iron by, 807
Supply companies and street obstructions, 508
" in Milan, 503
" Some statistics of, by J. P. Smith, 101
" and methods of stimulating demand, Observations on the, by J. E. Panton, 197
" works, Financial improvements of, by J. A. Jeckell, 198
Trees and, 916

ELECTRICITY SUPPLY ACCOUNTS—
Aberdeen, 752
Barnsley, 313
Birkenhead, 1040
Bolton, 512
Bury, 593
Cardiff, 711
Chesterfield, 353
Colchester, 103
Croydon, 187
Edinburgh, 752
Glasgow, 710
Greenock, 353
Grimsby, 272
Halifax, 961
Hammersmith, 803
Hanley, 874
Islington, 551
King's Lynn, 633
Kingston-upon-Thames, 393
Leeds, 917
Maidstone, 272
Manchester, 230
Mexborough, 230
Middleton, 28
Nelson, 792
Oldham, 792
Partick, 230
Salford, 669
Southampton, 999
Stepney, 313
Stockton, 27
Sunderland, 67
Swansea, 108
Walthamstow, 512
Wimbledon, 271
Wrexham, 961
York, 670, 753

ELECTRIC TRAMWAY ACCOUNTS—
Glasgow, 632
Hull, 632
Newcastle-on-Tyne, 552
Portsmouth, 552
Burnley, 433

ELECTRICITY WORKS—
Australasian, 628
Bexley Electric Lighting and Tramway, 583
Bradford, 991, 1031
Brussels, 742
Burton, 947
Coventry, Extensions, 626
Durban, 953, 994
Grantham, 631
Lancey, 506
Lowestoft, 223
Manchester, New works, 18, 101, 468
Metropolitan Electric Supply Co., 788, 833
Milan, 503
Morbegno (Valtellina Electric Railway), 543
Oldham (Greenhill), 865, 908
Paderno, 146
Rand Central Electricity Works, 59
Southend, 383
Sydney (N.S.W.) Tramways, 803
Vizzola, 143
Wimbledon, 263

ELECTRIC LIGHT NOTES—
Abercarn, 861
Aberdeen, 179, 427, 493
Abingdon, 540
Accrington, 260, 580
Acton, 801
Addis-Abeba (Abyssinia), 620
Aldrington, 661
Alloa, 861
Aivechurch, 427
Andover, 861, 1035
Antony, 661
Arbroath, 56 96, 307, 661, 703
Ashford (Kent), 580, 518, 903
Ashington, 340
Ashton-under-Lyne, 357
Aston, 14, 4 8, 580
" (Yorks), 955
Asylum Illumination, 11
Auckland, 15
Australia, 903
Austria, 520, 620

ELECTRIC LIGHT NOTES—*continued.*
Aylesbury, 397, 801
Ayr, 467, 1035
Baden, 903
Balby-with-Hexthorpe, 955
Balmain (N.S.W.), 986
Ballymena, 468
Bangalore, 703
Bantry, 903
Barcelona, 782
Barking, 260
Barnes, 861
Barnet, 1035
Barnsley, 15, 498
Barnstaple, 15, 96, 141, 986
Barry, 498, 661, 703
Barton, 620
Basingstoke, 933
Bath, 782
Batley, 56, 427, 782
Battersea, 15, 97, 427, 468, 662, 862, 956
Beckenham, 986
Bedford, 15, 739
Bedwellty Pits, 703, 861
Belfast, 269
Belgium, 260, 739, 782, 986
Bengal, 861
Benwell, 56
Berlin, 56, 141
Bermondsey, 142, 179, 468, 581, 819, 904
Bethnal Green, 581, 986
Beverley, 307, 1035
Bexhill-on-Sea, 141
Bexley, 661
Bideford, 179, 367, 499, 661
Bilbao, 739
Bilston, 141
Birkenhead, 56, 219, 862
Bishopstoke, 541, 862
Blackpool, 56
Blairgowrie, 1035
Blaydon, 56, 427, 955
Bodmin, 955
Bognor, 56, 141, 468, 703, 782
Bolton, 580, 703
Bo'ness, 141, 179, 307, 468
Bombay, 703
Bootle, 260, 620, 986
Boston, 307, 499
" (U.S.A.), 499, 903
Bothwell, 903
Bournemouth, 15
Bradford, 15, 56, 141, 186, 219, 283, 903
Brazil, 580
Brecon, 887
Brentwood, 56, 96, 661, 862
Bridgend, 56 141, 580, 739, 818
Bridgnorth, 986
Bridlington, 661
Bridport, 307, 661
Brierley Hill, 862
Brighton, 260, 307, 340, 427, 468, 540, 580, 661, 955
Bristol, 540, 704, 1035
Brixham, 782, 903
Brussels, 540
Brynmawr, 782, 818
Bucklow, 903
Buenos Ayres, 96, 739
Bulawayo, 499
Bunbury (W. Australia), 179
Burnham, 863
Burnley, 15, 340, 488
Burslem, 96, 219, 986
Bury, 661
" St. Edmunds, 307
Caerphilly, 96, 620, 784, 818, 862
Calne, 704
Camberwell, 15, 142, 179, 704, 956
Cambridge, 468, 540
Canada, 15
Cannock, 620
Canterbury, 662
Cape Colony, 340
Cardiff, 1035
Carlisle, 307, 662
Carnarvon, 260, 499, 540, 580, 662, 103
Carthagena, 142
Caterham, 704, 782
Chatham, 15
Chelsea, 179, 662
Cheltenham, 427, 468, 955
Cheshire, 862, 986
Cheshunt, 739
Chester, 179
Chesterfield, 862, 1035
Chippenham, 96, 499, 782
Chorley, 219, 739
Cirencester, 739
Clacton-on-Sea, 56, 260, 782, 955
Clayton, 56
Clevedon, 56, 955
Clitheroe, 541, 662, 818, 903
Clydebank, 96, 260, 340, 367, 427, 468, 862, 986
Colchester, 986
Colwyn Bay, 142
Consett, 427
Coombe, 818
Cottesloe (West Australia), 620
Coventry, 15, 499, 580, 620, 986, 1035
Crewe, 15, 96
Croydon, 56, 96, 179, 541, 662, 862
Crystal Palace, 956
Dalmatia, 620
Darlington, 662, 888
Dartford, 219, 499, 541, 732
Denbigh, 903
Derby, 903
Dereham, 782
Devizes, 340, 427, 541
Dewsbury, 260, 308, 1035
Doncaster, 1036
Dorchester, 179, 308, 662, 739
Dorking, 541
Dover, 15
Dublin, 96, 219, 340, 367, 427, 499, 541, 581, 904, 1036

ELECTRIC LIGHT NOTES—*continued.*
Dudley, 56
Dumfries, 739
Dundee, 581, 739, 818, 963
Dunfermline, 818, 862, 903, 986
Durban, 903
Durham, 818
Dursley, 96
Dutch Guiana, 620
Ealing, 782
East Barnet, 15, 96
Eastbourne, 732, 1036
East Dereham, 57
" Ham, 219, 308, 499
" Moseley, 662, 704, 782, 955
Eastleigh, 541, 862
Eccles, 367, 427
Edinburgh, 96
Edmonton, 142, 782, 862, 1036
Egremont, 818
Elgin, 427
Elland, 662, 1036
Epsom, 581
Eton, 96, 782
Exeter, 499, 541, 862
Exmouth, 260
Falkirk, 57, 340, 818
Farnborough, 219, 468, 1036
Farnham, 96, 782
Faversham, 818
Felixstowe, 142, 499, 541
Festiniog, 818, 986
Finchley, 15, 581
Finsbury, 662
Fleetwood, 887
Folkestone, 15
France, 581, 739, 782,
Freebridge Lynn, 57
Friern Barnet, 260, 581
Frinton-on-Sea, 862
Frome, 57, 499, 818, 903, 955
Gaiety Theatre, 739
Gainsborough, 179
Garlands, 739
Gateshead, 57, 581
Gelligaer, 819, 903
Germany, 219, 704, 739, 782, 819, 862, 903, 955, 986
Gillingham, 15, 662, 704, 1036
Glasgow, 260, 308, 541, 581, 862, 903, 955 987
Glastonbury, 955
Gloucester, 15, 260, 367, 427, 662, 739
Goole, 179
Gorton, 57, 1036
Gosport, 260, 819
Govan, 308
Gowerton, 260
Grantham, 662, 704
Gravesend, 15, 179, 308, 512, 620
Grays, 57
Greenock, 542, 581
Grimsby, 57, 341, 427, 704
Guildford, 260, 367, 862
Hackney, 15, 57, 97, 180, 367, 662, 740, 862
Halifax, 57, 142, 739
Ham (Surrey), 862
Hamilton, 542, 904
Hammersmith, 15, 219, 581, 904
Hampstead, 15, 142, 219, 261
Hampton Wick, 96, 308, 739
Hanley, 15, 219, 704, 1036
Hanwell, 97, 499, 782
Harrogate, 142, 704
Hastings, 542
Haydock, 620
Heavitree, 704, 739
Heligoland, 57, 862
Hereford, 97, 620
Herne Bay, 57
Heysham, 620
Hitchin, 15
Hollingbourne, 97, 819
Holyhead, 179, 260, 955
Horley, 862
Hornsey, 581, 662, 1036
Horsham, 308, 468
Horwich, 782
Hove, 57, 97
Hoylake and West Kirby, 179
Hoyland, 956
Huddersfield, 341, 427, 468, 704, 955, 987
Hull, 260, 704, 782, 862
Huntingdon, 260
Hyderabad, 142
Hythe, 174, 308, 542
Ilford, 542
Ilfracombe, 862
Ilkeston, 955
Ilkley, 260
India, 904, 739
Inverness, 581, 904
Ipswich, 862
Islington, 57, 260, 308, 427, 581, 610, 662, 819, 956, 1036
Italy, 97, 499, 542, 581, 620, 662, 704, 782, 862, 904, 987
Japan, 499
Johnstone, 142, 862
Karachi, 308, 704
Kensington, 219
Kettering, 704
Keynsham, 904, 1036
Kidderminster, 904
Kingsbridge, 57
King's Lynn, 308, 862
Kingston-on-Thames, 57, 219
Kingstown, 57
Kingswear, 704
King William's Town (S.A.), 819
Kirkcaldy, 704, 1035
Lambeth, 662
Lancaster, 15, 186, 581
Launceston, 862
Leadgate, 662
Leathe head, 740
Leeds, 581
Lees, 904
Leicester, 219, 782, 904

ELECTRIC LIGHT NOTES—*continued.*
Leigh, 662, 956
Leith, 179
Leyton, 97
Lichfield, 97, 862
Limerick, 15, 147, 341
Lincoln, 782
Linthwaite, 542, 662
Liskeard, 955
Littleborough, 862
Little Lever, 57
Liverpool, 142, 219, 308, 367, 427, 901
Llandudno, 499
Llanelly, 739
London, 142, 260, 261, 308, 341, 367, 427, 468, 499, 542, 581, 610, 620, 662, 704, 739, 819, 862, 904, 956, 986, 1036
Londonderry, 16, 261, 341
Long Eaton, 57
Longford, 904
Longton, 582
Lothians, 863, 1036
Loughborough, 16, 863, 956, 987
Louth, 819
Lowestoft, 147, 367, 662, 819
Ludlow, 251, 704
Luton, 542
Lymington, 1036
Lynton, 956, 987
Macclesfield, 542, 581, 621, 987
Madras, 308, 863
Maesteg (Glam.), 57, 740
Maidenhead, 57, 97, 220, 621
Maidstone, 468, 542, 904
Malden, 818
Malling, 57
Malton, 16, 220, 367
Manchester, 16, 57, 147, 220, 620, 740
Mansfield, 16, 147, 341, 704, 740
" Woodhouse, 341, 428
Market Harborough, 782
Marlow, 782, 987
Marylebone, 15, 57, 97, 180, 219, 499, 581, 662, 739, 904, 987, 1036
Maryport, 863
Melksham, 819, 904
Merton, 956
Methley, 956
Metropolitan Asylums Board, 16, 180
Mexico, 341
Middlesbrough, 621
Midland Power Co., 308
Milford on-Sea, 261, 704
Mirfield, 819
Mondariz (Spain), 819
Montrose, 97, 308
Motherwell, 97, 740, 782
Mulhouse, 500
Musselburgh, 956
Mutford, 220
Naval Dockyards, 57
Nelson, 428
Newark, 220
Newbury, 904, 956
Newcastle-on-Tyne, 309, 367, 500
" Emlyn, 740
" (N.S.W.), 97, 740, 904
Newhaven, 740
New Malden, 97, 987
Newport (Mon.), 57, 367, 428, 663, 904
Newquay, 309, 621, 862, 956
Newry, 663
Newton, 180, 367, 542
New York, 904
New Zealand, 220
Northallerton, 57, 97
Northampton, 147
Northfleet, 97, 500, 863
North Wales, 220
" -Western Electricity & Power Gas Co., 862
Northumberland, 789
Northwich, 97
Nottingham, 782
Norton, 341
Norwich, 220, 740
Nuneaton, 261
Oldham, 16, 261, 367
Ormesby, 821
Ormskirk, 367
Ossett, 542
Paddington, 15, 704
Paignton, 863, 1036
Partick, 309
Pemberton, 987
Pembroke, 500, 819
Penge, 956
Penmaenmawr, 417, 500, 663
Penrith, 937
Penzance, 819
Peterborough, 16
Phœnix, 803
Pitlochry, 704, 956
Plumstead, 739
Plymouth, 500, 663
Pollokshaws, 740, 904
Pontypridd, 97, 341, 905
Poplar, 16, 142, 428, 581, 662
Port Elizabeth, 819
Porthcawl, 367
Portsmouth, 663, 740
Portpatrick, 740
Portugal, 500
Potchefstroom (S. Africa), 180
Prestwich, 904
Provisional Orders, 98, 147
Pudsey, 58, 147
Queensborough, 468
Queenstown, 428
Radstock, 180
Rainham, 57
Ramsgate, 16, 57, 663, 740, 863, 987
Rangoon, 661
Reading, 261
Redditch, 57, 809, 147, 740
Redfern (N.S.W.), 1035
Redruth, 987
Reigate, 582, 668
Rhodesia, 341

ELECTRIC LIGHT NOTES—*continued.*
Knyl, 309, 500
Richmond, 904
Ripon, 58
Risca, 704, 740
Romford, 309
Rosario, 341
Rotherham, 98, 582, 819, 956
Ruthergien, 663
Saffron Walden, 500, 542, 819
St. Albans, 220 500, 581, 621, 905, 956
,, Annes, 180, 987
,, Asaph, 58
,, Austell, 663, 740
,, Helens, 388
,, Pancras, 97, 740, 904
Sale, 16
Salford, 16, 500, 740, 905, 956
Salisbury, 1086
Scarborough, 261
Scottish Central Electric Power Bill, 98
Scunthorpe, 987
Seaford, 819
Sheffield, 261, 987
Sheppey, 388
Shepton Mallet, 98
Sherbourne, 819
Shipley, 863
Shoreditch, 428, 468, 739, 904, 989
Shrewsbury, 147
Sittingbourne, 58
Sleaford, 58, 261
Slough, 180
S Africa, 16
Southampton, 147, 1036
Southborough, 220
Southend, 468, 819
Southgate, 542
Southport, 388, 663, 956
South Shields, 341, 428, 500
Southwark, 97, 179, 662, 956
Sowerby Bridge, 261
Spain, 16, 58. 147, 261, 581, 621, 663, 704, 740, 787, 819, 863, 925, 956, 1036
Spalding, 58, 621, 956
Spennymoor, 58
Springwell, 1036
Stafford, 309, 621
Stepney, 16, 97, 142, 179, 704
Stirling, 500
Stockton-on-Tees, 261, 428, 987
Stokefleming, 220
Stoke-on-Trent, 740, 863
Stone (Staffs), 905
Stourbridge, 58, 147, 388, 663
Stourport, 58, 261
Strabane, 704, 905, 987, 1036
Stratford-on-Avon, 863
Stretford, 542, 621, 663
Stroud, 863, 987
Sunbury, 98, 180, 582, 905
Sunderland, 97, 309
Sutton-in-Ashfield, 741
,, (Surrey), 819
Swanage, 819
Swansea, 58
Swindon, 16, 863
Swinton, 388, 663, 819, 1036
Switzerland, 348
Sydney (N.S.W.), 500, 819
Tamworth, 309, 704, 863, 1036, 1086
Taplow, 863
Teddington, 468, 663
Teignmouth, 741
Thames Ditton, 819
,, Valley, 863
Thirsk, 309
Thornaby, 663
Thornbury, 704
Thornhill, 98
Tipton, 58
Tiverton, 500, 547, 663
Todmorden, 17, 220, 819
Tonbridge, 17
Tonyrefail, 58
Torquay, 621
Tottenham, 309, 387, 542
Treeton, 741
Trowbridge, 58, 388, 819, 987, 1016
Tunbridge Wells, 180, 905
Tunstall, 663, 987
Turkey, 180, 220
Ulster, 147
Urmston, 148
Vienna, 621
Wakefield, 621
Wallasey, 17, 58, 500
Walsall, 500
Wallsend, 261
Walthamstow, 787
Walton-le-Dale, 468, 787
,, -on-Thames, 220, 469, 663
Wandsworth, 179, 581, 740
Wanstead, 58, 956
Warrenpoint, 388
Warsaw, 863
Watford, 58, 261, 956, 987
Wednesbury, 148, 261
Welshpool, 956, 987
West Australia, 621
,, Bromwich, 220, 621, 663, 741, 787
Westbury, 58
West Ham, 180, 741, 863
Westminster, 16, 581, 662, 704, 1036
Weymouth, 58
Whickham, 863
Whitby, 261, 621, 787
Whitehaven, 148. 469, 987
Whitehead, 547, 663
Whitley Upper, 663, 819
Widnes, 905, 956, 987
Wigston, 220
Willesden, 148, 220, 781, 863, 956
Wilts, 863, 905
Wimbledon, 17, 388, 704
Wimborne, 819
Windsor, 469
Wisbech, 663
Wishaw, N.B., 819

ELECTRIC LIGHT NOTES—*continued.*
Woking, 388, 987
Wolverhampton, 98, 261, 547, 621, 741, 819, 987
Wood Green, 741, 987
Woolwich, 17, 261, 547, 581
Worcester, 58, 621
Wormit, 741
Worthing, 388, 741
Wrexham, 547
Wrotham, 621
Wroxall, 905
Wycombe, 905
Yardley, 741
Yeadon, 956
York, 663
Yorkshire, 547

Electric light stations, Notes on engine driving in, by F. T. Callis, 970
,, lighting loans, 830
Electrification of fog, 806
,, of gas works, The, 351, 903
Electro-chemical discoveries, 357
Electrocuted in a coal mine, 630
Electro-deposition upon aluminium, 707
Electrolysis, Chlorine smelting with, 121
,, of water vapour, The, 631
Electrolytic cell for production of bleaching solutions. Two new forms of, by J. B. C. Kershaw, 1015
,, deposition of zinc on iron, 916
,, production of oxygen and hydrogen by the Garuti process, 331
Electro-magnetic support for lamps, An, 177
Electrons and atmospheric electricity, 888
,, Dynamics of, 526
Electrostatic voltmeters on alternating current circuits, Use of capacities as multipliers in connection with, by Prof. Ed. Marchant, 797
Elland combined electricity works and destructor, 791
Emergency brake, 533
,, sub-station, 809
Emmett, W. L. R., on Recent steam turbine developments, 522, 557
Employment of professional men in factories, 605
Engine and dynamo breakdowns, 717
,, driving in electric-light stations, Notes on, by F. T. Callis, 970, 1008
,, works, Brotherwood, 343
Engineering conference, The, 35, 75
,, education in the United States, 565
,, firms and motor-car construction, 661
,, industry, Continental electrical, 481, 651
,, standards committee, 120, 829, 928
,, training, 1039
Engineers at one guinea each, Electrical, by T. C. Futers, 415
,, Training of, 150
Erith tramway scheme, 78
European glow lamp combine, 929
Evidence on municipal trading, 483, 522, 603
Exhaust steam in condensing turbines, Utilising, 312
Exhibition, National cycle and motor-car, 861
,, of electrical machinery, 963
Experiments for improving the construction of practical standards for electrical measurements, 597, 637, 676
,, The Union Electricity Co.'s single-phase traction, 851
Extraction of radium, 647

FACTORY in Bermondsey, An electrically equipped, 195
Failure of electric supply, 720
Fair trade, Protection or, 83
Faraday Society, 1020
Farm, Electricity on the, by E. Guarini, 410
Fatal accident at East London (Cape Colony), 891, 971
Fatalities, Curious, 471
Fatality, 709
Fictitious figures supplied by municipal engineers, by E. K. Scott, 1010
Fiduciary position of local authorities, The, 361
Financial improvement of electricity supply works, by J. A. Jeckell, 198
Finzi, Dr. Giorgio, on Single-phase motors for traction, 728, 768
Fire alarm, Wireless telegraphy as a, 99
,, alarms: May-Oatway *v.* Sprinklers, 751
,, bogie, Electrical, 845
,, exhibition awards, 498
,, prevention, 259
,, Prevention Congress, International, 118
Fires, 152, 218, 219, 260, 592
,, caused by lightning, Necessary practical safeguards against, by A. Hands, 321
First aids and appliances, by J. D. McGowan, 575, 614
Fiscal policy and electric traction, 914
Fleming engine, Efficiency of a four-valve, 997
Fog dispersion, 969
,, Electrification of, 806
Folly, Wolverhampton's, 683
Forced draught system, The Horsfall refuse destructor and, 168
Foreign and British engineering, 286
,, gas engines at the St. Louis Exposition, 397
,, tenders, Labour claims and, 1014
Foster enclosed arc lamps, 218, 816
Free libraries, Inefficiency of, by E. K. Scott, 613
French competition for electric motor vehicles, 871, 916
Friction clutch, A new form of, by Prof. H. S. Hele-Shaw, 318
Fuel economy from the chemical point of view, 931
,, economy in electric stations, by H. McLaren, 319
,, Liquid, 107, 867
Furnace lining, Carborundum as a, 351
,, New electrical resistance, 931
Furnaces, Electric, 238
Futers, T. C., on Electric rock drills, 278
,, T. C., on Electrical engineers at one guinea each, 414
,, T. C., on Electricity in mines, 287, 362
Fynn, V. A., on The design of direct current machinery, 802, 818, 932, 944, 1049

GARRARD, C. C., on High tension cables and overhead transmission, 247
Gas engine and its future, The, 242, 248, 328, 368, 408, 477, 577
,, engine, Compression in the, by W. H. Booth, 297
,, engine of beam type, 1038
,, engine progress, 566
,, engines, Blast furnace, 339
,, engines for power stations, 527
,, pipe *v.* copper, by C. Alfred Smith, 719, 891
,, pipe *v.* copper: by E. K. Scott, 809
,, power plant at Ilseder iron works (Germany), Blast furnace, 907
,, standards and smoke abatement, 36
,, *v.* electric light in schools, 185
,, works, The electrification of, 351
Gauge, Tramway, 3
Gauges and standards, by H. T. Marshall, 36
Generating plant, Some notes on steam turbo-electric, 757
Generator of electricity, Radium as a, 931
Generators at Preston, Alternating current, 688
German electrical industry, 54, 288, 351, 879, 540, 818, 943
Gibson. G. H., on Why engineers should advertise, 439
Gilbert of Colchester, William, 972
,, Tercentenary Commemoration, 915
Glasgow municipal telephone system, The, 561, 610, 715
,, Telephony in, 974
Glow lamp combine, The European, 929
,, lamp, Round bulb, 258
Goods traffic on tramways, 915
Graphic methods, Calculator board and, 329
Grimby's refuse destructor, 65
Guarini, F., on Tangential traction, 291, 869

HALFPENNY tram fares, 391
Hampstead, Arc lighting in Willesden and, 758
Hands, A., on Necessary practical safeguards against fires caused by lightning, 321
Harison patent automatic signal, 723
Harvey, L. E., on Holiday traffic on tramways, 79
Headlight dangers, 914
Heat absorbed in the electrolysis of salts and the principle of the maximum work, by Dr. D. Tommasi, 374
,, of formation of copper-aluminium alloys, 915
Heating effect of radium, 847
Helium, Radium and, 126
Hibbert, W., on The Edison accumulator for automobiles, 883, 921
High speed electric traction on railways, by J. W. Jacomb-Hood, 75, 81
,, speed tool steels, Notes on, by H. H. Supple, 318
,, tension cables and overhead transmission, by C. C. Garrard, 247
Hobart, H. M., on Motor-generators and rotary converters, 519, 528, 607 647
,, H. M., on Speed variation of continuous-current motors by shunt control 926
,, H. M., on The necessity for precision of statement in technical work, 242
Holiday traffic on tramways, by L. E. Harvey, 79
Holidays in Germany, 382
Hooghwinkel, G., on Compounded asynchronous machinery, 122, 128, 167
Horse-power man, "Nominal," by E. K. Scott, 935
Horsfall refuse destructor and forced draught system, 168
Hospitalier, E., on The ondograph, 1006
Hospitals, Electricity for small, by W. Noble Twelvetrees, 657
Hotwell as oil extractor, 106
Hull municipal telephone scheme, 871
Hydro-electric power stations in Italy, 143
Hysteresimeter, Blondel-Carpentier, 579
Hysteresis by an oscillating magnetic field, Suppression of, 993

ILLICIT commissions, 767
Ilseder Iron Works (Germany), Blast furnace gas power plant at, 907
Imports of foreign electrical apparatus, 661, 703, 861, 903, 986
,, of telegraph cable and apparatus, 540
Impurities of commercial calcium carbide, 473
Incorporated Municipal Electrical Association, 237
India-rubber and gutta-percha planting 871
Induction coils, New winding for, 619
Industry, Continental electrical engineering, 481
Indian electrical volunteers, 750
,, Government Electrical Department, 996
Indicator, Kilroy's stoking, 681, 701
Industrial syndicates of Germany, 351
Industry, German electrical, 54, 288, 379, 540, 818, 943
,, Progress of the electrical, 805
,, Relationship of science to, 327
Inefficiency of free libraries, by E. K. Scott, 613
Infirmary lighting, 238
,, lighting, West Ham, 675
Influence of spectrum analysis on chemistry, 186
Installation, Continental colliery, 523
Installations in India, Electrical, 600
,, Recent developments of the Metropolitan Electric Supply Co's, 783, 823
Institution of Electrical Engineers, 166, 207, 317, 358, 401, 727, 829, 841, 871, 880, 921, 960, 967, 1005, 1050
,, of Electrical Engineers and the King of Italy, 871
,, of Electrical Engineers' Building Fund, 166, 207
,, of Electrical Engineers' dinner, 960, 1009
,, of Electrical Engineers and the tomb of Volta, 630
,, of Mechanical Engineers, 25, 186, 318
Instruments and machinery in Bengal; On the preservation of, by P. Bruhl, 317, 358
,, and testing sets, New moving-coil, 455
,, New transformer, 357
International Fire Prevention Congress, 821, 702
Interrupter, The development of the current, by J. Wright, 43, 127
Interurban car tests, 487
Ipswich electric tramways opening, 872
Islington electricity accounts, 526
Italy: Hydro-electric power stations in, 143

JACOMB-HOOD, J.W., on High-speed electric traction on railways, 75
Japan, Electrical news from, 800
Jeckell, J. A., on The financial improvement of electricity supply works, 198
Jointing and supporting tram rails: New method of, 413
Jone's new primary cell, 1014, 1019
Junior Institution of Engineers, 229, 591 675

KELVIN, Lord, on engineering training, 829
Kershaw, J. B. C., on Aluminium conductors for electric transmission lines, 678
,, J. B. C., on The use of aluminium as an electrical conductor, 450
,, J. B. C., on Two new forms of electrolytic cell for production of bleaching solutions, 1015
Kilroy's stoking indicator, 687, 701
Kimberley, Electric pumping plant for De Beers Consolidated Mines, 771
Knowlton, H. S., on An oil engine central station, 360

LABOUR clauses and foreign tenders, 1014
Lamp tests, Glow, 94
Lamps, An electro-magnetic support for, 177
Land, Compulsory purchase of, 751
Langdon, W. E., on The position and protection of the third rail on electric railways, 37
Large polyphase hauling plant, 817
,, water-power installation for aluminium production, 831
Law of negligence, Electrical companies and the, 642
,, of nuisance, 409
Laying a subaqueous electric light cable, 667
Leake, H. C., on Notes on the theory of parallel running of synchronous machinery, 800
Lectures, 498, 508, 551, 751, 873, 960, 1038

LEGAL—
Acetylene Gas & Electric Smelting Co., 591
Assessment Appeal, 751
Bank of Liverpool *v.* Milnes & Co., 216
Bond *v.* The B. E. S. Tramways, Ltd., 511, 550, 591
Bright's Trustees *v.* Parsons, 816
Brookes and Others *v.* The Urban Electric Supply Co., 1020
Brompton and Kensington Electric Supply Co., *v.* Shadforth, 132
Butcher *v.* South London Electric Supply Corporation, 87
Carnaby *v.* Neale and the South-Western Electrical Co., 375
Chamberlain & Hookham, L'd., *v.* Bradford Corporation, 253
Charing Cross and City Electric Supply Co., 132
City of London Electric Lighting Co. *v.* The Mayor and Corporation of the City of London, 254
Cowell *v.* The St. Pancras Borough Council, 1020
Day *v.* The British Electric Tramways Co., 132
Dixon *v.* Hall & Co., 216
,, *v.* Ilo Syndicate, 132
Electric Tramways Construction and Maintenance Co., 170
,, Tramways and Maintenance Co., Ltd., 698
,, Tramways Trust, 881, 422
Electrical Publishing Co., 858
Ferranti, Ltd., 432, 944, 978
Filford *v.* Scullard, 170
French Electric Lighting Boards, 591
Geipel and Lange *v.* Manchester Corporation, 978
Greenhouse and others *v.* South Lancashire Electric Traction and Power Co., 734, 818
Hallet *v.* Galway Electric Co., 944
Jandus Arc Lamp and Electric Co. *v.* Arc Lamp Co., 829
Knight *v.* The Isle of Wight Electric Lighting and Power Co., 591, 631, 889, 901, 944, 978
Lazarus *v.* National Telephone Co., 340
Livett *v.* South London Electric Supply Corporation, 141
Lloyd's Packing Warehouses, Ltd. *v.* Veritys, Ltd., 859
London Motor Omnibus Syndicate, Ltd., 421
Marylebone Electric Supply, 46, 253
Maxim Electrical Corporation, Hiram S., 254
Metropolitan Electric Supply Co. *v.* Boro' Council of Marylebone, 46, 253, 977
,, Electric Supply Co. *v.* Lundy & Wheatley, 859
Mile End Guardians *v.* Hoare, 87
Milnes & Co., G. F., 170, 979
National Company and the Distribution of Electricity by Secondary Generators, Ltd., *v.* Gibbs, 1020
,, Electric Traction Co. *v.* Electric Construction and Maintenance Co., 132, 216
,, Telephone Co. *v.* Corporation of Kingston-upon-Hull, 5, 271
,, Telephone Co. *v.* Phelps, 944
,, Telephone Co. *v.* Samuel, 57
,, Telephone Co. *v.* Williamson, 340
Patent Exploitation, Ltd., *v.* the American Electrical Novelty and Manufacturing Co., 4, 44, 85, 130 1021
Pickering *v.* Urban Electric Supply Co., 708
Postmaster-General *v.* Wimbledon U.D.C., 859
Premier Lamp Co. *v.* Binko, 6
Sellon *v. Daily News*, 103, 132
Sherman *v.* Lowenstein, 461
Wells *v.* Stewart Electrical Syndicate, 807, 875
White *v.* Wallace, 87
Wilde *v.* Thompson, 697

Legal position of the consulting engineer, 930, 984
,, query column, 119, 164, 449, 782, 844, 858, 928, 1041
Legislation of the past session, Private Bill, 819
Liability for tramway accidents, 342
Life-guard, Newton tramcar, 701
Life-guards and brakes, Relative importance of, 518
,, guards in Paris, Compulsory, 974
Lifts, Electric, 457
Lighting and Traction at Southend-on-Sea, Electric, 383
,, season, Devices and fittings for the current, Electric, 566, 577, 615, 654, 695, 730, 771, 911
,, statistics, London electric, 557
Lightning, Death by, 975
Liquid controller, New, 641
,, fuel, 867
,, fuel for power purposes, 107
,, switch for intermittent work, New automatic, 1028
Liquidations, 55, 95, 178, 208, 307, 340, 391, 467, 498, 511, 540, 580, 619, 661, 703, 739, 818, 860, 902, 946
Litigation or compromise? 1026
Little Geeko, 217
Local audit, by a legal contributor, 269
,, authorities, The fiduciary position of, 861
Locus standi of ratepayers, 327
London, A technical University for, 1
,, Artesian wells, 817
,, 'Bus, The, 348
,, Chamber of Commerce, The 31, 708
,, County Council, 11, 34, 53, 66, 82, 84, 90, 91, 494, 591, 630, 669, 790, 873, 990
,, County Council, Amateurs in conclave, 82
,, County Council Electric Tramways, 11
,, County Council, Lord Avebury and the, 84
,, County Council tramway feeder pillar, 34
,, County Council Tramways, Conduit *v.* trolley system, 53, 90
,, County Council Tramways specification for steam engines, 494
,, electric lighting statistics, 557
,, Electrical Contractors' Association, 207
,, School Board, 820
Lorain system, Wolverhampton and the, 640. (See also under "Wolverhampton")
Lowestoft Municipal Electrical Tramways, 223
Islington electricity accounts, 526

MACHINE Tools, Electrically driven, 627
,, tools, Tests of motors driving, 750
Machinery in Bengal, On the preservation of instruments and, by P. Bruhl, 317, 358
McGowan, J. D., on First aids and appliances, 576, 614
McMahon, R. V., on The C. and S. L. R. working results of the three-wire system applied to traction, &c., 1050
Magnetic circuit, True tale of a, 914
,, disturbances, 472, 749, 831
,, observatory, 65
Managers and electricity, Colliery, 325
Manchester, Suppresso vari, 727
,, and Mr. Metzger, 709
,, Corporation and its electrical engineer, 694
,, Corporation, New electricity works of, 463
Manufacture of electric accumulators, 299
,, of electrolytic bleaching compounds, 891
Manufacturers' and Contractors' Association, The, 1016
Marchant, Prof. E. W., on The use of capacities as multipliers in connection with electrostatic voltmeters on alternating current circuits, 797
Market, Our South African, 800
,, Raw rubber, 983
Markets of the World, 340
Marriages, 66, 185, 229, 873, 915
Marshall, H. T., on Gauges and standards, 36
Marylebone Borough Council, 1011
Matter: The realisation of a dream, Modern views on, by Sir William Crookes, 115, 157
May-Oatway *v.* Sprinklers: Fire Alarms, 751
,, fire appliances, 703
Mechanical draught, 277
,, Engineers' conference, 228
,, stokers, 966
Mercury arc, Phenomena of the, 997
,, vapour lamp, New, 217, 1088
Mersey Railway engines and cars, 25
Method for finding the efficiency of series motors, by E. Wilson, 490
,, of tuning wireless telegraph stations by means of the "Multiplier," by Count Arco, 393, 437, 483
Methods of profit-sharing, &c., Modern, 350
Metropolitan Electric Supply Co.'s installations, Recent developments of the, 763, 938
Milan, Electricity supply in, 506
,, exhibition (1906), 599, 902
Miller signalling system, 578
Mines, Electricity in, 186
,, of Europe, Electric power appliances in, 1027
Miniature enclosed arc lamp, 217, 258
Modern autocrat, 846
,, equipment of docks, with special reference to hydraulic and electric appliances, by W. Pitt, 35
,, views on matter: the realisation of a dream, by Sir William Crookes, 115, 157
Mono-Rail, The, 407
Mosley Commission, The second, 326
Motor, A waterproof, 14
,, car construction and engineering firms, 661
,, car reliability trials, 312
,, cars, The speed of, 352
,, Development and use of the small electric, 277
,, driven hack saw, 381
,, generators and rotary converters, by H. M. Hobart, 519, 528, 607, 647
,, hansoms, 349
,, speed regulation, Continuous and alternating, 271
,, and tram speeds, 609
,, wagons, tramways, and other topics, 669
Motormen and conductors, Selection and training of, 163
,, Selection of, 1014
Motors for locomotion, Petrol, 36
,, for variable speed, Alternating current, 209
,, Progress in alternating current, 202
Moving-coil instruments and testing sets, New, 455
Multiple supply electric railway system, 761
Municipal Electrical Association, 105, 116, 125, 159
,, engineers, On some fictitious figures supplied by E. K. Scott, 1010
,, telephone scheme, Hull, 371, 440
,, telephone system, Glasgow, 610, 715
,, telephony, 406, 686
,, trading, 245, 281, 471 483, 522, 603
,, Tramways Association, 158
,, *v.* company lighting in Vienna, 280
Municipality as contractor, 42

NAMES, Trade, and Trade Marks, 293
National Cycle and Motor-car Exhibition, 861
,, Electrical Contractors' and Manufacturers' Association, 186
Navy Boilers, 106
Necessity for precision of statement in technical work, by H. M. Hobart, 242, 281
New ampere and voltmeter, 860

NEW COMPANIES—
Aerozone, Ltd., 433
Alert Electrical Co., 832
Automatic Circuit Breakers, Ltd., 152
Bath Electric Manufacturing Co., 1e6
Blake-Morscher Electrical Ore Separator Syndicate, 632
British Accumulators Co., 874
,, Cable Syndicate, Ltd., 998
,, Electric Calibrated Fuse Co., 433
,, Electric Separating Co., 187
,, Johns-Manville Co., 998
,, L. M. Ericsson Manufacturing Co., 832
,, Tramways and General Construction Co., 152
Bruce Peebles & Co., 27
Carlton Motor Co., 392
Chichester and District Electric Supply Co., 709
Column Printing Co., 313
Cross Electric and Manufacturing Co., 551
Derby Electrical Co., 916
Durham and District Electric Traction Co., 961
Edison Manufacturing Co., 551
Ekstromer Accumulator Co., 313
Electrical Engineering Co. of London, 187
,, Indicator Syndicate, 393
,, Turnery, Ltd., 874
Electro Institute, 352
,, Peat-Coal Syndicate, 832
,, Post Railway Co., 393, 433, 511
,, Sulphur & Light Co., 1040
Electrophone Co., 961
Etheridge Railway Co., 998
Gell Telegraphic Appliances, 393
Gent & Co., 709
Glamorgan Engineering Co., 151
Glasgow Electric Crane and Hoist Co., 433
Havana Electricity Co., 407
Headley, Ltd., 473
Hemsworth Electricity Supply Co., 632
Henley's (S. Africa) Telegraph Works Co., 27

NEW COMPANIES—*continued.*
Hyde Electrical Manufacturing Co., 107
Incandescent Lighting and Electric Fittings Co., 709
Jarrow and District Electric Traction Co., 693
Kinetic-Swanton Co., 593
Kingswood Electric Supply Co., 916
Kolar Mines Power Station, Ltd., 473
Körting Bros., 352
Kroeger Light Cure and Electro-Therapeutic Institutes, 998
Lawrences, Ltd., 709
Light Cure and Electro-Theurapeutic Institute, 832
Lionel Robinson & Co., 152
Manufacturing Electric Co., 511
Metals Extraction Syndicate, 393
M.I.P. Electrical Syndicate, 473
Morris, Timothy, 313
Municipal Foundry and Engineering Co., 632
Newmarket Electric Light Co., 632
North Wales Power and Traction Co., 230
Nottingham Electrical Co., 230
Ozone Generators, 152
Penarth Tramway Syndicate, 511
Pisciocelli Electric Post Parent Syndicate, 709
Portpatrick Electric Supply Co., 107
Priestman Power Co., 916
Reliance Electric Co., 152
St. Albans and District Electric Supply Co., 832
Seale, Austen & Barnes, 632
South-Western Electrical Co., 313
Sprinkler Co., 66
Sunderland District Electric Tramways, 832
Synchronised Electric Clock Co., 998
Tavistock and District Electric Supply Co., 1040
Tonyrefail & Gilfach Goch Electric Lighting Co., 593
Torquay Electro-Therapeutic Institute, 1040
Uddington District Electric Lighting Co., 66
Ulster Electric Power Distribution Co., 152
Universal Insulator, Ltd., 27
Van Raden & Co., 392
Wathes, T. H., & Co., 832
Wave Power Co., 392
Wells, Rayner & Co., 593
Western Electric Distribution Corporation, 832
West Surrey Light Railway Co., 709
Whitehead Electric Supply Co., 511
Wright, A. J., Ltd., 874

New design for electric tramcars, 550, 659
,, electrical resistance furnace, 931
,, English car, 886
,, journal, 229
,, liquid controller, 641
,, mercury vapour lamp, 217
,, method of joining and supporting tram rails, 413
,, moving-coil instruments and testing sets, 455
,, school of electricity, 473
,, switches, 218, 332, 380
,, winding for induction coils, 619
,, works at Bradford, 599
,, works of Messrs. Benham and Froud, Ltd., 811
,, Zealand and duty on imported tramway machinery, 614
Newcastle tramways, Electric traction as applied to the, by A. E. Le Rossignol, 159
,, tramways and the question of depreciation, 169
Newport exceeds its trading powers, 492
Newton tramcar life guard, 701
Nickel plating efficiency, 667
"Nominal" horse-power man, by E. K. Scott, 935
Non-inflammable wood, 668
North Metropolitan Power Co., 708
Northampton Institute, 229
Notes on papers at the Syracuse (U.S.A.) Street Railway Convention, 879
,, on steam turbo-electric generating plants, by Geo. Wilkinson, 691
,, on the theory of parallel running of synchronous machinery, by H. C. Leake, 800
N. S. Secondary Cell, 487
Nursing, Board of Trade on, 448

OBITUARY—
Bramwell, Sir F., 900
Curra, J. W., 960
Hinton, R. J., 432
Hookey, J., 829
Midgley, G., 591
Immisch, Moritz, 571
Lund, W., 669
Robertson, G. H., 65
Salisbury, Lord, 348
Thurston, R. H., 792

Observatory, New magnetic, 65
Odell, W., on Preliminary experiments on air friction, 490

OFFICIAL RETURNS—
Aberystwyth & Chiswick Electricity Supply Corporation, 67
Ackroyd & Best, 107
Adams-Randall Telephone Patents Co., 832
Allen, W. H., Son & Co., 107, 153
Anglo-Portuguese Telephone Co., 632
Ashford and District Electric Supply Co., 1040
Atlas Engineering Co., 999
Auckland Electric Tramways Co., 352
Bastian Meter Co., 852
Bath Electric Tramways, 709, 832
Blackpool, St. Annes and Lytham Tramways Co., 999
Bournemouth and Poole Electricity Supply Co., 917
Bray, G., & Co., 483
Bright's Light and Power Co., 353, 710
British Aluminium Co., 710
" Continental Electricity Co., 710
" Electric Calibrated Fuse Co., 1040
" Electric Car Co., 108, 917
" Electric Transformer Co., 393
" Prometheus Co., 917, 999
" Schuckert Electric Co., 352
Brockie-Pell Arc Lamp Co., 999
Brooker & Goss, 752
Bryan Donkin & Clench, 393
Buenos Ayres Electric Tramways (1901), 107, 632
Burnand Transformer Co., 1040
Callender's Cable and Construction Co., 354, 393
Central Electric Supply Co., 108, 874
Chili Telephone Co., 511
City of Wellington Electric Lighting and Power Co., 917
Codd Arc Lamp Co., 108
Conduit & Insulation Co., 917
Connolly Bros., 710
Cowper-Coles & Co., Sherard, 181, 393, 433, 999
Crompton & Co., 393
Cross Electric Engineering & Manufacturing Co., 752
Crystal Palace District Electric Light Supply Co., 352
Cuba Submarine Telegraph Co., 67
Derbyshire and Nottinghamshire Electric Power Syndicate, 66
Direct Spanish Telegraph Co, 66
" West India Cable Co., 710
Eastern Telegraph Co., 108, 632
Edison & Swan United Electric Light Co., 999
Edisonia, Ltd., 833
Edmundson's Electricity Corporation, 710
Electric and General Investment Co., 393
" Construction Co., 393
" Danite Syndicate, 108, 833
" Ozone Syndicate, 752
" Reduction Co., 187
" Timber Seasoning and Preservation Co., 393
" Traction Co, of Hong Kong, 187
Eleptrical Corporation, 710
" Indicator Syndicate Co., 917
" Inkless Printing Syndicate, 710
" Power Storage Co., 393
" Supplies, Rubber & Ebonite Co., 393
Evershed & Vignoles, 67
Ferranti, Ltd., 353
Fladbury Electric Light & Power Co., 874
Fleetwood & District Electric Light and Power Syndicate, 512
Folkestone Electricity Supply Co., 67
Frinton-on-Sea & District Electric Light & Power Co., 108, 710
General Electric Tramways Co., 67
Geneva Tramways Co., 632, 999
Globe Telegraph and Trust Co., 152
Glover & Co., F. A, 917
" & Co., W. T., 352
Grant's Drill and Trolley Co., 108
Guildford Electricity Supply Co., 67, 107, 393
Halifax and Bermudas Cable Co., 710
Harrington Electric Light Co., 352, 393
Hartlepool Electric Tramways Co., 67
Harwich Electric Lighting and Tramway Co., 353
Higginson, G., & Co., 833
Hirst, A., & Son, 352
Hove Electric Lighting Co., 999
India Rubber, Gutta Percha and Telegraph Works Co., 512
Indo-European Telegraph Co., 67
Ingleton Electric Lighting and Power Co., 187, 632
Keighley Electrical Engineering Co., 710
Kent Electric Power Syndicate, 67, 916
Langdon-Davies Motor Co., 433, 917
Lisbon Electric Tramways, 393
London and Provincial Electric Construction Co, 66
" Electrical Fittings Co., 917
Longstreths, 67
McGuire Manufacturing Co., 512
Manufacturing Electric Co., 833
Mather & Platt, 917
Maxim, Sir Hiram, Electrical and Engineering Co., 917
Melton Mowbray Electric Light Co., 187
Metals Corporation, 632
Mexico Electric Tramways, 393, 1040

OFFICIAL RETURNS—*continued.*
Midland Electric Supply Corporation for Power Distribution, 393
Monorail Portable Railway Co., 66
Monte Video Telephone Co., 917
Nalder Bros. and Thompson, 512
National Electric Wiring Co., 187
New Century Arc Lighting Co., 393
" General Traction Co., 352
Newcastle and District Electric Lighting Co., 632
" -upon-Tyne Electric Supply Co., 108, 187
Northampton Electric Light and Power Co., 393, 710
Parker, Thos., 393
Penarth Electric Lighting Co., 66
Penzance and District Electric Supply Co., 1040
Peterborough Electric Traction Co., 152, 187
Renewable Electric Lamp Co., 66
Primitiva Gas and Electric Lighting Co., of Buenos Ayres, 633
Provincial Electric Construction Co., 999
Pulvermacher, J. L., & Co., 917
Rosling & Fynn, 67
Royce, 108, 187, 433, 833
Sharpe & Co., 874
South African Lighting Association, 874
" American Cable Co., 512
Sunbeam Lamp Co., 513
Suter, F., & Co., 66, 433
Sutton, H., & Co., 833
Timmiss, E., & Sons, 512
Tyer & Co., 393
Underground Electric Railways Co., of London, 186
United Electric Light & Power Supply Co., 393
" Kingdom Light Railway and Electrical Syndicate, 1040
" River Plate Telephone Co., 393
Walsall Electrical Co., 999
Welding, T. C., & Co., 353, 433
West African Telegraph Co., 187
" Coast of America Telegraph Co., 67
" India & Panama Telegraph Co., 152
Weston-super-Mare & District Electric Supply Co., 833
White, Jacoby & Co., 512
" J. G., & Co., 393
Woking Electric Supply Co., 187, 353, 433, 917
Woodhouse & Mitchell, 633
Worcester Electric Traction Co., 833

Oil extractor, Hotwell as, 106
" engine central station, An, by H. S. Knowlton, 860
" fuel, 666
" Separators, 702
Oldham Corporation, The Greenhill electricity works of the, 865, 908
Ondograph, The, by E. Hospitalier, 1006
Operat on of alternators, Parallel, 567
Overhead and other railways, 35
" electric wires, 26, 151
" traction for road vehicles, The Stoll system, 423
Oxygen and hydrogen by the Garuti process, The electrolytic production of, 331
Ozone, The sterilisation of water by means of, 1039

PANTON, J. E., on Observations on electricity supply and methods of stimulating demand, 197
Parallel operation of alternators, 866, 567
" working of alternators, by B. Hopkinson, 599
Paris disaster, Berlin underground railway and the, 373
" disaster, 285
Parkinson, G. R., on Central station economies: The utilisation of condensed steam, 976

PARLIAMENTARY—
Beckenham Tramways, 90
Birmingham Tramways, 134
Bradford Tramways, 172
Brighton Tramways, 10, 88, 172
Charing Cross, Euston and Hampstead Railway, 8
Chatham and District Light Railways, 133
City and South London Electric Railway, 9
Dewsbury, Batley and Birstall Tramways, 172
Gosport and Fareham Tramways, 9
London County Council Tramways, 135
Municipal Trading Committee, 6, 48, 89
North Metropolitan Electric Power Supply, 217
" Western Electricity and Power Gas, 171
Plymouth Tramways, 171
Pontypridd Tramways, 10
Romford and District Tramways, 50
Royal Commission on London Traffic, 5, 49, 87, 133, 171, 312, 793, 839, 871, 892, 915, 969-996, 1018
Seaforth and Sefton Junction Railway, 89
Sheffield Tramways, 9

PARLIAMENTARY—*continued.*
Somerset and District Electric Power, 135, 172
South Lancashire Tramways, 50
Sutton Coldfield Tramways, 135
Various Bills, 50, 90
Walton-on-Thames Electric Lighting, 49
Warmley Electric Lighting, 47
Workmen's Trains, 217

Parlyphones, 462
Parsons steam turbine in America, 1038
Pearson, G., on The sphere of utility of a power company, 197
Peat fuel problem, 799
Pendulum apparatus for testing steel for brittleness, 666
Personal, 26, 27, 65, 106, 152, 186, 229, 271, 312, 352, 392, 432, 472, 506, 550, 592, 630, 668, 709, 751, 792, 830, 873, 916, 960, 997, 1038
Petrol motors for locomotion, 36
Philanthropy of self-help, 510
Phosphorescence of minerals by radium, 727
Physical condition of the British race, 205
Pitt, W., on Modern equipment of docks, with special reference to hydraulic and electric appliances, 35
Plant, Private house, 465
Pleasure of business, 646
Portrait plates, Our, 687
Post Office and motor vans, 219
Pour rire, 208
Powell, P. H., on Consideration of some points in the design and working of ballistic galvanometers, 492
Power appliances in mines of Europe, Electric, 1027
" production, Refuse destruction and, 365
" stations, Coal scales for, 530
" stations, Gas engines for, 527
" stations in Italy, Hydro-electric, 143
Practical examples with the calculator board, by E. Raymond-Barker, 652, 721, 769, 837
Preliminary experiments on air friction, by Wm. Odell, 490
Premium pupils in electricity works: Prof. Thompson's view, 829
Preservation of instruments and machinery in Bengal, On the, by P. Brühl, 317, 358, 401
Preston, Alternating current generators at, 688
" specification, 913
Private Bill legislation of the past session, 319
" house plant, 465
Problems, Street traffic, 414
" that are facing the electrical engineer of to-day, by J. G. White, 398
Pro bono publico, 247
Professional men in factories, Employment of, 605
Profit-sharing, &c., Modern methods of, 350
" scheme of the United States Steel Corporation, 184
" Wholesale, 238
Progress, Gas engine, 566
" of the electrical industry, 805
Promotion by merit, 591

PROSPECTUSES—
Auckland Electric Tramways Co., 153
Charing Cross and Strand Electricity Supply Corporation, 112
Havana Electricity Co., 112
Isle of Wight Electric Light & Power Co., 112
Manchester and Liverpool Electric Express Railway Co., 112, 153
Meldrum Bros., 29
Oriental Telephone and Electric Co., 70
South Staffordshire Tramways (Lessee) Co., 29
Sunderland District Electric Tramways, 793
Whitehead Electric Supply Co., 712

Protection, business and sentiment, 165
" A reply to Mr. Byng, 416, 478
" in relation to tramway enterprises, 976
" or fair trade, 43
Protective devices for high tension electrical systems, by W. B. Woodhouse, 560
Provisional Orders, 1903, 117, 817
Public safety, Speed and, 327
" safety, Speed and, by Dr. Louis Bell, 332
Pump, The Quimby, 849
Pumping for irrigation, Electric, by E. K. Scott, 496
" plant at Dortmund, Electric 633

QUIMBY pump, The, 849

RADIATION from the human body 126
Radio-activity and the age of the sun, 526
" and the cure of consumption, 206
Radium, 392, 510, 1038
" and helium, 126
" as a generator of electricity, 931
" at the British Association, 486
" Extraction of, 647
" Heating effect of, 847
" Phosphorescence of minerals by, 727
Rails, Continuous, 847

RAILWAY(S)—
American statistics, 310
Berlin high speed tests, 509, 551, 650, 705, 728, 863
" Underground, 373
Central London, 428
East London, 181
" Indian, 390
Elberfeld, 869
Europe, Electric in, 279
Furness, 341
Great Northern and City, 664
" Northern and electric traction, 942
" Western and motor-cars, 342
High speed electric traction on by J. W. Jacomb-Hood, 75, 81
Light, 17, 181
Liverpool and Southport, 312
" Overhead, 221, 938
London, Brighton & South Coast, 181, 221
Manchester-Liverpool high speed, 222
Melbourne, 99, 181
Mersey, 262
Metropolitan, 181, 429
Multiple supply electric system, 761
New York Central and H.R.R., 957
North Eastern, 429
Overhead and other, by S. B. Cottrell, 35
Paris Underground, 263, 270, 342, 873, 884
Progress, Electric, 525
Safety of Tube, 889
South-Eastern & Chatham, 23
Swedish, 501
Taff Vale, and electric traction, 317
Third rail on electric, The position and protection of the, by W. E. Langdon, 37
Tube, Safety of, 889
Valtellina Electric, 543, 569
Vesuvius, 788
Wirral, 23, 313
Working results of the three-wire system applied to traction, the City and South London, by P. V. McMahon, 1050

Ramsgate tramcar accident, 333, 630
Rand Central electric works, 59
Ratepayers, *Locus standi* of, 527
Rating, Tramway, 1019
Raw rubber market, 933
Raymond-Barker, E., on Practical examples with the Calculator Board, 652, 721, 769, 837
Raymond-Barker, E., on Tests on broken cables: some inconsistencies in localisation formulæ, 250, 288
Recent developments of the Metropolitan Electric Supply Co.'s installations, 783, 823
" steam turbine developments, by W. L. R. Emmett, 523, 551
Record of the E.E.R.E. Vols. in South Africa, 306
Redruth and Camborne tramway, 1035
Refuse destruction and power production, 365
" destruction: Twenty-five years' progress, 446
Regenerative tramcar control, 119, 138
Relationship of science to industry, 337
Relative importance of life guards and brakes, 518
Report on municipal trading, 280
Repulsion motors, Single-phase, by W. Cramp, 490, 559
Research, The pecuniary value of scientific, 3 0
Resistance formulæ, Train, 350
" furnace for heating tubes, A, 914
" of fly-wheels, 229
" of road vehicles to traction 889, 965, 1005
" of selenium, 997
" of the human body, Electric, 872
Reversibility of thermodynamics, by J. Swinburne, 452

REVIEWS—
An analysis of British coal and coke, 299
Beginner's manual of submarine cable testing and working, by G. M. Baines, 763
Calculating scale, by W. Knowles, 1017
Chaudières marines, par M. L. Bertin, 93
Continuous current dynamos and motors, and their control, by W. B. Kelsey, 94

REVIEWS—*continued.*
Design of dynamos, by Prof. S. P. Thompson, 211
Elementary applied mechanics, by A. Jamieson, 210
„ telegraphy, by A. Crotch, 1017
Engine tests and boiler efficiencies, by J. Buchetti, 660
Engineering preliminaries for an interurban electric railway, by E. Gonzenbach, 763
Experiments with vacuum tubes, by Sir David L. Salomons, 659
First course in machine drawing, by Geo. Halliday, 298
General commercial and mining code, 969
Internal wiring of buildings, by H. M. Leaf, 1017
Mechanical refrigeration, by Hal Williams, 211
Munro & Jamieson's pocket book, by J. Munro and A. Jamieson, 1017
Patent Office Library Series, 1017
Physico-chemical tables for the use of analysts, physicists, chemical manufacturers, and scientific chemists, by J. Cassell Evans, 573
Spon's engineers' price book, by T. G. Marlow, 763
Steam and the steam engine, by A. Jamieson, 210
„ power plants, by H. C. Meyer, 660
Storage battery engineering, by Lamar Lyndon, 298
Students' guide to submarine cable testing, by H. K. C. Fisher and J. C. H. Darby, 480
Switchgear construction, by G. S. Erlacher, 574
Trade and empire, by J. B. C. Kershaw, 638
Treatise on thermodynamics, by Dr. Max Planck, 763
Watch repairing, by F. J. Garrard, 1017
Whittaker's Electrical Engineers' Pocket Book, by K. Edgcumbe, 1017

Right to cut off supply, The, 282
Road vehicles, Overhead traction for, 423
Robertson Electric Lamp Works, 25
Rock drills, Electric, by T. Campbell Futers, 278
Rossignol, A.E. Le, on Electric traction as applied to the Newcastle Tramways, 159
Royal Commission on London Locomotion, 8, 49, 87, 133, 171, 312, 798, 829, 871, 892, 915, 959, 996, 1018
„ Society conversazione, The, 22
Rubber, Advance in, 574
Rubber market, Raw, 933
Runcorn and Widnes transporter bridge, 1028

SAFEGUARDS against fires caused by lightning, Necessary practical, by A. Hands, 321
Safety dress, Electrical, 226
St. Louis Exposition, 867, 902
„ Louis Exposition, Foreign gas engines at, 397
Sandy Point and Berlin Wireless Telegraph Conference, 413
Saratoga, September, 1903, On some papers read at, 531
Science, Birthday Honours and, 767
„ and education, 799
Scientific arrangements for the 1903-4 session, 791
Scott, E. K., on Electric pumping for irrigation, 496
„ E. K., on Gas pipe *v.* copper: A reply, 809
„ E. K., on Some fictitious figures supplied by municipal engineers, 1010
„ E. K., on The broadness of the electrical engineering profession, 803
„ E. K., on The inefficiency of free libraries, 618
„ E. K., on The "Nominal" horse-power man, 935
„ E. K. on Waste of energy in tendering, 650
Secondary cell, N.S., 487
Securities, Trustee, 438
Selection of motormen, 1013
Selenium, Resistance of, 997
Sensational science, 915
Sentiment and protection, Business, 165
Shanghai, Voice from, 407
Shock fatalities, 105, 151, 891
Short's H.V. switch, 258
Signalling, Electric, 992
Siloxicon and carborundum, 812
Single phase alternating current motor, 579
„ phase integrating wattmeter, 747
„ phase motors for electric traction, 392
„ phase motors for traction, by Dr. Georgio Finzi, 728, 768
„ phase repulsion motors, by W. Cramp, 490, 559
Smith, C. A., on Gas-pipe *v.* copper, 719, 891
„ J. P., on Some statistics of electricity supply, 161
Smoke abatement, 367, 873
„ abatement, Gas standards and, 36
„ nuisance, Cure for, 592
Snell's, Mr. J. F. C., presidential address, 116

SOCIETIES AND INSTITUTIONS—
American Electro-Chemical Society, 391
„ Electro-Therapeutic Association, 391
Arts, of, 25, 791
Association of Engineers-in-charge, 791
Dundee Institute of Engineers, 667
Electrical Contractors' Association, 775
Electro-Harmonic, 509, 591, 790, 828, 960
Engineers' Club, 879
Engineers, of, 791, 1039
Faraday, 651, 1020
Glasgow and West of Scotland Technical College, 270, 791
Institute of Mining Engineers, 270
„ of Marine Engineers, 591
Institution of Electrical Engineers, 317, 358, 401, 727, 829, 921, 967, 1005, 1009, 1050
„ E.E. (Birmingham), 791, 830, 874
„ E.E. (Dublin), 1009
„ E.E. (Glasgow), 790, 820, 924
„ E.E. (Leeds), 791, 925
„ E.E. (Manchester), 791
„ of Mechanical Engineers, 25, 186, 318
International Fire Prevention Congress, 921
Iron and Steel Institute, 592
Junior Institution of Engineers, 106, 550, 591, 675, 708, 791
King's College Engineering, 997
Liverpool Engineering, 791, 966
London University, 960
Municipal Electrical Association, The Incorporated, 125, 944
New York Electrical, 708
Physical, 65, 750, 811, 887, 1008, 1026
Royal, 831, 874, 913,
„ Institution, 751, 990
Tramways and Light Railway Association, 391
West Hartlepool Scientific, 771
Yorkshire College Engineering, 666 751

South Africa, Record of the E.E.R.E. Vols. in, 306
„ Africa, Trade of, 850
„ Africa, Underground cables in, 951
„ African notes, 39, 74, 106, 151, 270, 299, 344, 374, 443, 509, 538, 576, 658, 873, 890, 930
„ African tramways, 620
Southend-on-Sea electric lighting and traction, 333
Southport one-man electric car, 513
Specification, Curious, 332
„ Swansea electric tramway, 640
Specifications, A curiosity in, 14
Speed and public safety, 327
„ and public safety, by Dr. Louis Bell, 332
„ of electric cars, 629, 873
„ of motor cars, The, 352
„ of steam turbines, Critical, 576
„ of tramcars, 803
„ regulation, Continuous and alternating motor, 271
„ variation of continuous-current motors by shunt control, by H. M. Hobart, 926
Standard direct current pressures and standard frequencies, 694
Standards, Gauges and, by H. T. Marshall, 36
„ Committee, Engineering, 120
„ for electrical measurements, 597, 637, 676
Standardisation of rail sections, 527
Statistical review of electric traction, 725
Statistics of electricity supply, Some, by J. P. Smith, 161
Statutory obligations of supply companies, 300
Stealing electricity, Charge of, 629
Steam turbines, 36
„ turbines, Critical speed of, 576
„ turbo-electric generating plants, Some notes on, by G. Wilkinson, 691, 757
Sterilisation of water by means of ozone, 1039
Stimulating demand, Observations on electricity supply and methods of, by J. E. Panton, 197
Stokers, Mechanical, 966
Stoking indicator, Kilroy's, 681
Stoll system of overhead traction for road vehicles, 423
Street lighting tests, 44
„ obstruction by electrical undertakers, 790, 806
„ obstructions, 550
„ railway convention, Notes on papers at the Syracuse (U.S.A.), 879
„ traffic problems, 414, 445; by Col. Crompton, 449
Strength of shell boilers, 184
Strike at Neasden power station, 432
„ clause, 1025
Stripping brass from iron by electricity, 807
Submarine signalling, 872
„ telegraphy, Picard system for, 490
Sub-station dangers and their prevention, Some, 162
„ Emergency, 809
Suggested hydraulic unit, 873
Sun, Radio-activity and the age of the, 526
Superheated steam, The economy of, 1039
Superheater, Cruse controllable, 1007
„ tests, 511
Superheaters, Schmidt & Bolton, 218
Supple, H. H., on Notes on high speed tool steels, 318
Supply companies and electric railways, 917
Supposed electrolysis of water vapour, 631
Swansea electric tramway specification, 640
Swinburne, J., on The reversibility of thermodynamics, 452
Swiss turbines of 45,000 H.P. for Mexico, 497
Switch for intermittent work, New automatic liquid, 1028
„ construction, by N. C. Woodfin, 1045
„ improved, 94, 258
Switchgear for the colonies, Cellular, 563
Sydney (N.S.W.) electric tramways, Extension of, 303
Synchronous machinery, Notes on the theory of parallel running of, by H. C. Leake, 800

TANGENTIAL traction, 290, 369
Technical Institute, The proposed new, 151
„ University for London, A, 1
Technological Dictionary, 902
Telegram, Non-delivery of a, 906

TELEGRAPH(S)—
Australian, 221
Cable imports, 148, 379, 1035
Dutch and German agreement, 588
India, 705
„ and China, 151
„ telegraph service, 821
International Conference on Wireless Telegraphy, 222, 347
„ rules and rates, 149
„ Telegraph Conference, 23, 26, 748
Mercadier phonic multiplex, 182
New Zealand, 389, 490
Picard system for submarine telegraphy, 490
Pollák-Virág rapid telegraph, 83
Post Office, 267, 470
Rates to the Far East, 100, 389
Siemens & Halske rapid type-printing, 958
Simla, 706
Speeds, 869
State-owned, 788
Uganda, 23
Underground to the North, 958
Wire export trade, 100, 269, 470, 988
West African, 569

Telegraphists, Wages of, 943
Telegraphy as a fire alarm, Wireless, 99
„ Simultaneous, 788
„ Wireless, 24, 64, 100, 149, 183, 222, 268, 310, 347, 389, 502, 549, 588, 627, 664, 706, 720, 724, 748, 822, 870, 906, 969
Telephone assessments, 548
„ system, Glasgow Municipal, 610, 715

TELEPHONES—
Anglo-French, 148
Australian, 429
Belgium, 511, 549
Bournemouth, 100, 821
Brighton, 63, 148, 347, 588, 947, 1037
East Dereham, 63
Glasgow, 262, 429, 588, 859, 869, 906, 988
Guernsey, 310
Halifax, 490, 958
Hull, 347, 371, 440, 706, 788
Italian, 1037
Liverpool, 227, 958
London, 548, 664
Melbourne, 588
Municipal competition, 975
Northampton, 906
Paris and Rome, 627
Portsmouth, 23, 548
Post Office, 1037
Saint Lucia, 149
Spanish, 588, 822, 906
Swansea, 706, 788, 988
West Hartlepool, 958

Telephones on trains, 578
Telephonic communication with the Continent, 988
Telephony, in Glasgow, 974
„ Municipal, 24, 406, 686, 812
Tendering, The labour and cost of, 73
„ Waste of energy in, by E. K. Scott, 650
Tenders in their legal aspect, 886
Testing of alternators, 969
„ of electric generators by air calorimetry, by R. Threlfall, 967
Testing tires electrically. 1049
Tests of motor-driven machine tools, 750
„ of the Edison storage battery, 718
„ on broken cables—Some inconsistencies in localisation formulæ, by E. Raymond-Barker, 250, 288
„ Street lighting, 44
Third rail on electric railways. The position and protection of the, by W. E. Langdon, 37
Three-phase alternators for Bloemfontein, 74
„ machinery in mines, 390
„ motors, Coal-cutting machines with, 425
Threlfall, R., on The testing of electric generators by air calorimetry, 967
Tires electrically, Testing, 1049
Tomlinson-Lee, H., on Hot-wire enclosed arc lamps, 179
Tommasi, D., on The heat absorbed in the electrolysis of salts and the principle of maximum work, 374
Tool steels, Notes on the high speed, by H. H. Supple, 318
Track drilling machine, Tramway, 12

TRACTION NOTES—
Aberdeen, 58, 469, 663
Adelaide, 787
Altrincham, 547, 704, 741
Ashton-under-Lyne, 621
Aston Manor, 469, 987
Audenshaw, 787
Austria, 500
Ayr, 469
Bath, 98, 341
Batley, 220, 661, 704
Beckenham, 906, 987
Belfast, 261, 547, 705
Belgium, 869
Berlin, 547
Bermondsey, 58
Bexley, 547
Birkdale, 221
Birkenhead, 221, 388, 1036
Birkenshaw, 542
Birmingham, 58, 98, 148, 180, 341, 582, 987
Bishop Auckland, 819
Blackburn, 622
Blaydon-on-Tyne, 582
Bolton, 341
Bournemouth, 622
Bradford, 17, 220, 388
Brighton, 261, 428, 705, 956
Bromley, 58, 180, 469
Brussels, 742, 957
Burton-on-Trent, 261, 341
Burma, 941
Burnley, 58
Bury, 341, 582
Camberwell, 957
Canary Islands, 741
Cardiff, 58, 98, 957, 1036
Carlisle, 309
Cavehill and Whitewell (Ulster), 705
Chatham, 663, 820, 1036
Cheltenham, 98, 622
Chesterfield, 500
Chicago, 905
Coatbridge, N.B., 388
Colchester, 42
Crewe, 820
Dartford, 820
Denmark, 388
Derby, 788, 957
Dewsbury, 98, 341, 957
Douglas, 663
Dresden, 261
Dublin, 181, 957
Dumbarton, 181
Durham, 988
Eastbourne, 582
East Cheshire, 803
„ Ham, 622, 863, 905
Eccles, 582, 622
Egypt, 341
Erith, 261
Failsworth, 309
Farnborough, 148
Finchley, 98
Finland, 500
Flint, 148
Folkestone, 988
France, 582, 663, 705
Gateshead-on-Tyne, 603
Germany, 741
Glasgow, 17, 221, 428, 582, 705, 820, 869, 905
Glossop, 309, 341
Gloucester, 869
Gourock, 905
Greenock, 500, 741, 820
Greenwich, 17
Halifax, 221, 388
Hamilton, 181
Handsworth, 705
Heywood, 388, 547
Holywell, 17, 261
Huddersfield, 221, 342, 388, 428, 581, 664, 788, 1036
Hull, 705, 988
Hyde, 582
Ilkeston, 58
Irvine, 98
Islington, 957
Italy, 98, 181, 582, 664, 869, 957, 1036
Johnstone, 622
Kansas City, 905
Keighley, 181
Kilmarnock, 181, 262, 309
Kirkcaldy, 469, 622, 740
Kirkintilloch, N.B., 803
Lambeth, 741, 988

TRACTION NOTES—*continued.*
Lancaster, 241
Leeds, 181, 262, 582
Leicester, 309, 868
Leith, 98
Liège, 664
Lincoln, 741, 957
Liverpool, 221, 342, 389, 428, 500, 664, 705, 788, 869
Llanberis, 705
London, 17, 58, 148, 181, 221, 262, 309, 389, 428, 469, 500, 548, 582, 622, 664, 705, 741, 820, 869, 905, 957, 988
" United, 262
Lowestoft, 150, 228
Lucknow, 93
Macclesfield, 548, 869
Manchester, 181, 221, 262, 310, 342, 828, 469, 548, 582, 622, 664, 705, 741, 821
Mandalay, 988
Middlesex, 63, 99, 548
Mid-Yorkshire, 182
Musselburgh, 664
Newcastle-on-Tyne, 50, 222, 310, 429, 622, 664, 741, 988
Newfoundland, 389
Newport, 74, 627
New York, 663, 905, 1036
Northampton, 389, 429
North Wales, 501
Nottingham, 222, 747, 821
Nuremberg, 664
Oldham, 222
Oswaldtwistle, 1036
Paddington, 905
Paisley, 222, 501, 741, 747, 869
Paris, 988
Penarth, 906
"Perfect Contact" system for electric traction, 83
Perth, 548, 582, 1036
Pietermaritzburg, 664
Plymouth, 900
Pontypridd, 582
Portsmouth, 262
Portugal, 501
Preston, 548, 821
Prestwich, 310
Provisional Orders, 810
Radcliffe, 821
Rainham, 869
Reading, 63, 182, 587, 988
Romford, 869
Russia, 342, 869, 1037
St. Helens, 58, 429, 747
Salford, 469, 627, 906
Shildon, 869
Southill Nether, 747
" Upper, 863
Southend-on-Sea, 388, 664, 748
South Lancashire, 869
Southport, 99, 182, 262, 957
South Shields, 389, 429, 664, 957, 1037
South Wales, 58
Southwark, 17, 98, 500
Spain, 347, 501, 548, 906
Spen Valley, 587
Stepney, 17
Stirling, 342
Stockport, 869
Stretford, 17, 664, 788
Sunderland, 99, 310, 469, 821, 957

TRACTION NOTES—*continued.*
Swansea, 627, 788
Sydney (N.S.W.), 17, 622
Torquay, 664, 788, 821
Tottington, 389
Trafford Park, 619
Tyneside, 548
Vienna, 17
Wallasey, 262, 342, 821
Walsall, 99, 262, 627, 747, 988
Wandsworth, 182, 501
Wandle, 821
Warrington, 148
Wednesbury, 262, 469
West Bromwich, 748
" Ham, 182, 501, 703, 95
Whitefield, 23
Wigan, 548
Woking, 501, 664, 821
Wolverhampton, 17, 63, 99, 148, 182, 229, 262, 429, 469, 501, 587, 622, 988
Worcester, 389, 988
York, 17

Traction as applied to the Newcastle Tramways, Electric, by A. E. Le Rossignol, 159
" at Southend-on-Sea, Electric lighting and, 383
" Fiscal policy and electric, 914
" for road vehicles, Overhead, The Stoll system, 423
" on railways, Electrical, 705
" on railways, High-speed electric, 75, 81
" Resistance of road vehicles to, 889, 965, 1005
" Single-phase motors for, by Dr. Georgio Finzi, 728, 768
" Tangential, 290, 369
Trade-marks and trade names, 293
" of South Africa, 850
" union tyranny, 243
Trades union congress, 448
Trading, Municipal, 245, 471
Traffic problems, Street, 445
Train resistance formulæ, 350
Training of engineers, 150
" of motormen and conductors, Selection and, 163
Tram rails, New method of jointing and supporting, 413
Tramcar accident, Ramsgate, 690
" control, Regenerative, 119, 139
Tramcars, New design for electric, 659
" Speed of, 803
Tramway accounts, Electric, 123
" and Light Railway Association, 391
" competition and reduced railway receipts, 432
" enterprise, Protection in relation to, 976
" matters, Electric, 278
" rating, 1019
" specification, Swansea electric, 640
Tramways Association, Municipal, 158
" B. of T. suggestions *re*, 950
" convention at Glasgow, 26
" Holiday traffic on, by L. E. Harvey, 79
" L.C.C. electric, 11
" of Sydney (N.S.W.) extensions, 808
" opening, Ipswich electric, 872
Transformer instruments, New, 357
Transporter bridge, Runcorn and Widnes, 1028
Transvaal, 703, 869
Transmission wires, Overhead, 151
Treatment of cancer by electric osmose, 607
Trolley system, Conduit *v.*, 53, 90
" wire combined, Circular and figure 8, 875
Trucks, Brighton, 750
True tale of a magnetic circuit, 914
Trustee securities, 438
Trying to avoid electrification, 591
Tube railways: An idea, 391
" railways, Safety of, 889
" Troubles in the, 447
Tuning wireless telegraph stations by means of the "multiplier," On a new method of, by Count Arco, 399, 437, 482
Turbines, Steam, 13, 36
Twelvetrees, W. Noble, on Electricity for small hospitals, 657

UNDERGROUND cables in South Africa, 951
Undertakers, Street obstruction by electrical, 806
Union Electricity Co.'s single-phase traction experiments, 765, 851
United States and German electrical companies, 709
" States, Engineering education in the, 565
Universities and battleships, 405
University College, London, 127
" for London, A technical, 1
Unreasonable demands, 687
Upton, T., on Carriage of merchandise on electric tramways, 251, 291, 363
Use of capacities as multipliers in connection with electrostatic voltmeters on alternating-current circuits, by Prof. E. W. Marchant, 797
Utilisation of condensed steam, Central station economies, by G. R. Parkinson, 976
Utilising exhaust steam in condensing turbines, 312

VALTELLINA electric railway, 543, 569
Value of scientific research, The pecuniary, 350
Ventilation of tube railways, 666
Vicarey, R. W., on Central station batteries, 679
Victoria falls, 391, 750
Voltmeters, Edgewise ammeters and, 141
Volunteers, E.E.R.E., in S. Africa, 306
" Indian electrical, 750
Vulcan prepayment meter, 816

WAGES of telegraphists, 943
Waste of energy in tendering, by E. K. Scott, 551
Water-power plants in America, 667
Wattmeter, Single-phase integrating, 747
Welder for wire hoops, Automatic electric, 33
West Ham infirmary lighting, 624
Westinghouse-Bremer arc lamps, 200
" producer gas engines, 661
" rumour, 944
When is a loss not a loss? 526
White, J. G., on The problems that are facing the electrical engineer of to-day, 398
Wholesale profit-sharing, 238
Why engineers should advertise, by G. H. Gibson, 439
Wilkinson, G., on Some notes on steam turbo-electric generating plants, 691, 757
Wills, 152, 916, 1039
Willesden and Hampstead, Arc lighting in, 758
Wilson, E., on A method for finding the efficiency of series motors, 490
" E., on The electrical conductivity of certain aluminium alloys as affected by exposure to London atmosphere, 451
Wimbledon electricity works, 268
Wind-driven electricity works, 878
" protection for electric cars, 791
Wingfield, C. H., on Cast-iron for piston rings, 563
Wireless telegraphy, 24, 64, 100, 149, 188, 222, 268, 310, 347, 389, 502, 549, 586, 627, 664, 706, 726, 748, 822, 870, 906
" telegraphy as a fire alarm, 99
" telegraph congress, 347
Wires, Overhead electric, 26
Wiring specification, The E.C.A. proposed model, 744
Wolverhampton tramways, 447, 527, 640, 689
Woodfin, N. C., on Switch construction, 1045
Woodhouse, W. B., on Protective devices for high tension electric systems, 560
Workers in South Africa, Electrical, 312
Workmen's Compensation Act, 246
World's demand for tool-making machines, 892
Wright, J., on The development of the current interrupter, 43, 127, 204, 207

INDEX TO PUBLISHED SPECIFICATIONS OF PATENTS.

1901.

BOSE, J. C. (18,430), 404
British Thomson-Houston Co. (17,029), 404
Bull, S. C. (18,430), 404
Bush, J. (18,577), 404

CASTLE, F. (18,515), 404
Conrad, F. (18,314), 404

DRAKE, B. M. (17,282), 404

EDMONDSON, J. (16,827), 404

FAIRBANKS, J. A. (18,666), 404

KRUPP, F. (18,400), 404

MEDWAY, M. T. (18,577), 404
Millar, D. (18,771), 404
Mix & Genest (17,766), 404

NERNST Electric Light, Ltd., (17,282), 404

OPPENHEIMER, H. (17,766. Berlin), 404

RAM, G. S. (17,282), 404
Reichwald, A. (18,400), 404

SARGENT, H. R. (17,029), 404
Scholl, C. (18,246), 404
Stanger, J. J. (18,816), 404

TAYLER, J. B. (18,600), 404

WHITE, C. F. (18,515), 404
Wright, R. O. (16,847), 404

902.

ABEL, C. D. (2,587), 284; (12,162), 404; (12,156), 404; (12,159), 484; (12,158), 284; (12,157, 12,160, 12,161), 324; (453), 80
Abrahams, L. J. (11,881), 284
Ackermann, G. (23,048), 204
Adams, A. H. (2,984), 284
Adler, A. S. (17,141), 564; (17,143), 604
Aktiebolaget Svenska Electriska Urfabriken (8,892), 244
Allison, C. A. (2,816), 284
American Alkali Co. (15,579), 364
Ancel, L. (19,403), 654, 619
Anderson, K. (11,357), 644
" R. (23,357), 324
Andrews, L. (4,032), 124
" J. S. (11,516), 324
Angold, A. E. (23,694), 1052
Apple, V. G. (4,520), 644
Armoux, R. (5,290), 204
Armstrong, J. T. (21,706), 1052
Aron, L. J., and J. W. Flower (11,323) 404; (11,324), 644
" L. J. (12,449), 524
Arzano, C. (25,353), 324; (25,954), 324
Atherton, G. (14,901), 564
Atkinson, C. W. (8,503) 244
Auger, C. N. van C. E. W. (27,006), 204

BAGGETT, H. (2,005), 604; (2,031), 484
Baird, E. P. (1,772), 484; (23,231), 1052
Balfour, G. (13,840), 364
Ball, H. P. (14,560), 1012
Baker, H. (14,133), 484; (14,135), 524
" W. H. (14,509), 364
Banks, W. C. (2,816), 284
Barr, J. (23,357), 284
Bate, A. H. (15,944), 324
Baumer, M. (8,224), 264
Beau, H. (13,868), 444
Beckett, G. E. (10,008), 484
Bede, E. (9,982), 40
Bedell, B. H. (1,557), 404
Behr, F. B. (3,610), 240
Bellamy, A. R. (11,139), 324
Bence, H. H. (7,358), 40
Bentley, T. B. (23,933), 1052
Bergmann, D. (3,165), 284
Berry, H. H. (8,548), 244; (1,496), 404
Bertrand, L. (3,059), 284
Bettney, T. H. (3,236), 284
Bijar, J. (10,541). 1012
Bing, E. (4,262), 284
Blanchet, A. (5,010), 124
Blathy, O. T. (11,840), 1012
Bloxam, A. G. (15,128), 524; (1,767), 484
Bohm, R. and E. (17,678), 524
Bonnella, A. J., and D. H. Bonnella and Son, Ltd. (7,684), 40
Boot, H. L. P. (16,698), 1012
Bott, R. J. (22,346), 1052
Boult, A. J. (13,877), 484; (3,149), 604; (14,952), (15,579), 364; (13,142), 80
Bounevialle, A. C. (14,932), 564
Bourgeat, A. (6,558), 604
Boyes, F. (15,155), 364
Bradbury & Co. (17,460), 524
Bradley, L., and S. Allen (7,501), 1012
Braham, R. W. (19,432). 324
Bray, E. N. (6,653), 604; (6,654), 40
Brecknell, H. (14,897), 524; (15,981), 564; (22,623), 684
Bremer, H. (18,786), 644; (12,241), 524
Brequer, G. (16,808), 1012
Brewster, J. W. (18,830), 364
British Prism Globe Electrical Co. (2,840), 284
" Thomson-Houston Co. (12,415), (12,416), 524; (13,529), 524; (13,782), 564; (18,317), 644; (18,320), 644; (18,327), (18,322), (18,328), (18,330), (18,331), (19,985), 644; (13,734), 604; (15,039), 564; (18,316), 564; (13,851), (13,852), 524; (19,328); 364; (6,143), 40; (8,557), 124; (11,081), 164; (2,264), 284; (2,666), 284; (11,489), 284; (9,135), 324; (7,152), 40; (18,956), 364; (7,486), 244; (18,324), (18,326), (18,319), (18,079), (18,033), (18,036), (18,379), (18,076), (13,934), (13,527), 444; (18,816), 604; (11,079), 40
" Westinghouse Electric and Manufacturing Co. (561), 464
Britton, S. E. (2,520), 284; (2,521), 284; (3,520), 80; (2,521), 80
Broadbent, D. R. (11,086), 244
Brooker, A. (8,441), 40
Brookes, A. G. (9,873), 244
Brougham, R. T. D. (8,112), 324
Brown, H. G. (28,167), 444
" S. A., (14,295), 364
" S. G. (750), 484; (9,040), 324
" S. R. (13,510), 364
" W. M. (361), 604; (360), 604
Bryan, F. (8,456), 604
Bryant, E. E. R., C. H. and E. W. (7,684), 40
Buder, T. C. (25,312), 324
Bullard, A. M. (20,739), 204
Bunting, E., and Wilson & Bennett, Ltd. (15,813), 564
Burn, R. S. (12,494), 524
Burnaby, A. S. V. (15,216), 364
Burnet, C. D. (15,116), 444; (15,715), 604
" W. S. (16,310), 40
Burke, C. G. (12,671), 164
Burns, G. H. (24,635), 204
Butcher, J. (16,843) 44
Buttner, M. (7,121), 244
Byng, G. (9,531), 244

CALICO Printers' Association (5,533), 124
Callan, J. G. (2,264), 284
Callender's Cable & Construction Co. (6,947), 124; (1,343), 604
Carbone, T. L. (27,657), 684; (23,092) 684; (27,510), 444
Carolan, E. A. (24,102), (24,704), (24,705), (24,712), 1052
Carruthers, J. A. (21,470), 204
Carter, A. E. (3,061), 284
Caspar, D. A. (5,894), 124
Cerebotani, L. (3,124), 284
Chaquette, E. (11,423), 284
Chauvin, R. (5,296), 204
Cherry, J. T. (22,675), 444
Chiesa, A. (22,140), 1052
Childs, J. G. (19,428), 644; (14,001), 524
Chitty, H. (9,397), 40
Chloride Electrical Storage Co. (28,013), 444
Claremont, E. S. (12,752), 444
Claypoole, W. (14,166), 364
Clift, A. S. (28,012), 204
Clinker, R. C. (5,891), 324
Cogswell, H. J. (2,825), 284
Collings, R. (18,655), 204
Collins, H., and C. W. (1,402), 404
Cook, C. (10,528), 604
Cooke, E. S. (1,021), 604
Cotsworth, W. (5,538), 124
Cousans, R. S., and L. B. (27,983), 684
Cowan, E. W., and W. B. Dale (14,487), 564
Cowx, H. S (17,106), 564
Cox, H. W. (23,783), 684
Crawley, C. W. S. (11,765), 524
Creed, F. G. (1,061), 604; (21,478), 1052
Crompton, R. E. B. (5,260), 124
Crudgington, W. (4,763), 124; (4,763), 644
Cuenod, H. (12,691), 444
Cunningham, H. (4,262), 284
Cruvellier, B. (3,024), 284

DANNEELS E. (5,975), 564
Darby, G. A. (25,805), 444
Davis, H. P. (28,288), 80
Davy, W. J. (21,831), 644; (15,413), 564
Dawson, A. T. (16,514), 364
Day, C. A., (28,340), 80
D'Ayguesvives, J. (7,834), 244
Deeafore, P. (7,478), 124
Deetz, C. (18,789), 284
Devonshire, T. E. (22,017), 644; (1,355), 604; (8,396), 40
Dieselhorst, W. (4,357), 324
Dolter Electric Traction Co. (667), 484
Dorman, C. M., and R. A. Smith (22,421A), 684; (14,286), 1012
Dowsing, H. J. (15,591), 564
Drysdale, C. V. (16,014), 444
Duryea, C. E. (12,218), 284

EASTON & Co. (14,605), 524
Ebutt, P. G. (19,522), 40
Eckstein, A. (3,441), 40; (23,604), 1052
Edgcumbe, K. (4,180), 284
Edgerton, H. N. (10,789), 1012
Edwards, W. R. (9,529), 324
Eisenmann, E. (4,374), 324
Electric and Ordnance Accessories Co. (7,957), 40; (15,815), 564
" Controller and Supply Co. (3,374), 284
" Motive Power Co., (9,111), 324
Electrical "Lumiscriptor" Co. (14,156), 364
Ellen, A. E. (4,285), 324
Ellis, T. W. (8,775), 40
Engelsmann, A. (12,284), 524; (23,110), (23,969), 204
Engisch, G. (23,048), 204
English, W. M., (22,685), 204
Erben, H. F. T. (7,486), 244; (2,666), 284
Etchells, J. C. (15,842), 644
Evans, C. J. (17,667), 444
" W. E. (10,262), 564; (18,740), (7,714), 1012
Everest, A. R. (19,228), 364
Everett, E. I. (4,180), 284

FABRE, C. (21,901), 1502
Fahnestock, E. B. (8,660), 1012; (13,663), 364
Fairweather, W. (18,907), 1012
Faller, A. E. (4,445), 324
Faraday, H. (4,463), 644
Farnham, E. W. (1,827), 604; (19,787), 164
Favarger, A. (28,599), 684
Fell, J. M. (23,797), 1052
Ferguson, A. R. (6,003), 1012
" J., K. White, J. White, Ltd. (14,349), 404
Ferranti, S. Z. de (10,231), (10,800), 324; (7,039), (10,899), 244
Ferreira, L. M. G., and R. Wilkie (13 854), 604
Fessenden, R. A. (17,708), 164; (26,552), 80
Field, M. B. (13,792), 484
Fischer, A. (11,972), 284
Foley, J. S. (23,323), 684
Fournier, C. (12,691), 444
Frank, S. (3,154), 604
Franke, Dr. R. (2,135), 284
Freeman, C. E. (28,789), 444
Fricker, G. C. (13,663), 444

GAIFFE, G. E. (14,533), 484
Garrard, C. C. (10,899), 244
Garuti, P. (2,820), 284
Garvi, J. (10,466), 524
Gaud, E. (16,485), 604
Gell, J. (21,090), 644; (16,862), 324
Genard, L. A. (15,312), 604
General Electric Co. (24,102), (24,704), (24,705), (24,712), 1052; (11,814), (11,820), (11,824), (11,827), (11,829), (11,830), (11,834), (11,836), (11,841), (11,843), (12,080), (12,764), 284; (11,825), (11,838), (11,839), (11,849), (11,850), (24,100), 324
Gerrard, C. H. (1,325), 604
Gibbs, J. W. (22,657), 1052
Gilbert, C. E. G. (3 153), 80
Gill, E. R. (14 542), (14,707), 524
Gin, G. (12,702), 564
Gloerfield, C. (12,078), 1012
Goldberg, E. (7,923), 40
Goodwin, J. B. (10,137), 444
Gouin, P. A. (16,984), 644
Graham, A. (6,884), 404
Green, F. J. (19,110), 444
Gregson, L. (22,067), 1052
Griffiths, W. (1,537), 404; (12,684), 524
Grisconn, A. C. (18,655), 204
Grisson, R. (3,163), 604; (3,163), 80
Gubing, F., (9,062), 40
Gurwitsch, L. (16,338), 564

HACKETHAL, L. (577), 484
Haddan, H. J. (13,570), (14,106), 1012 (40,459), 444; (11,516), 324
" R. (18,747), 444
Hadfield, F. H. (4,999), 124
" R. A., and D. Galbraith (20,240), 644
Hall, B. J. (418), 484
" R. (22,152), 1052
" R. F. (7,967), 40; (2,774), 284
Halsey Electric Generator Co. (28,805), (28,807), 484; (28,808), 80; (28,809), 276
Hammond, J. F. (24,598), 204
Hansen, T. P. (22,171), 204
Hardingham, G. G. M. (5,512), 244 (15,119), 644
Hardman, E. (2,552), 284
Harlve, M. (20,280), 40
Harris, W. (14,897), 524
Harrison, H. T., (3,157), 284
Hart, O. W. (4,650), 644
Hastings, H. (6,947), 124
Heany, J. A. (27,787), 324
Heap, A. C. (13,255), 284
" A. C., and W. O. Smith (12,823 524
Hearson, T. A. (14,286), 404
Heinze, J. O. (23,492), 324
Henshaw, C. T. A. (10,841), 324
Henze, C. (12,030), 404
Herrgott, J. M. C. (2,377). 284
Hickley, A. H. (15,458), 564
Higgins, F. H. W. (14,430), 404
Higginson, G. (1,344), 604
Highfield, J. S. (14,507), 40
Hill, A. (2,024), 484
" G. (8,136), 124
" H. M. (13,947), 364
Hillmann, H. W. (8,858), 324
Hindle, T. T. (24,031), 684
Hirst, H. (15,155), 364
" H. (21,177), 284
Hogan, G. L. (6,473), 244; (12,517), 284
Hogner, P. (23,606), 684
Holden, F. (9,135), 324
Holson, A. B. (24,128), 684
Honold, G. (2,736), 80
Hooydonk, A. Van (20,863), 644
Hopfelt, R. (26,071), 684; (3,336), 284 (13,038), 444; (3,336), 80
Hopkinson, B. (1,888), 484
Horne, J. (16,514), 364
Hornsby, H. H. (27,096), 204
Horsfall, M., and J. Crowther (16,776), 444
Howard, A. H. (14,670), 364
Howorth, S. W. (9,983), 1012
Hubert, P. (8,679), 1012
Hulsmeyer, C. (19,901), 644
Hunter, C. E. (10,631), 1012
Hurrell, G. C. (1,820), 484; (7,216), 244
Hyatt, W. H. (13,539), 444

IDE, G. H. (1,435), 404
Ilgner, C. (13,556), 564
Improved Electric Glow Lamp Co. (3,157), 284
Imray, J. (14,576), 364
" O. (12,182), 524; (23,755), 204
Irving, E. C. (5,032), 124

JACKSON, F. T. (10,102), 604
Jager, K. H. H. (23,661), 204
Jandus Arc Lamp and Electric Co. (21,946), 1052
Jensen, P. (16,754), 364; (3,919), 284

Jevons, S. (15,949), 564
Johnson, G. W., (8,833), 1012
„ J. Y. (12,032), 1012; (3,074), 284
Jones, A. D. (21,346), 1052
„ J. and G. (3,416), 284
„ W. E., W. R., and W. G. H. Sedwell (15,929), 1012
Justice, P. M. (12,015), 1012 (16,748), 364

KANDO, C. de (26,476), 444; (26,967), 584; (26,477), 204
Kelvin, Baron (17,960), 604
Kempt, D. (5,938), 1012
Keuttner, B. (15,463), 364
Kilroy, W. D. (1,229), 604
Kimble, A., and T. S. Betz (8,472), 1012
Kingsbury, J. E. (6,817), 604
Kip, F. E. (14,509), 364
Kirby, A. and A. J. (11,160), 644
Kirk, J. W. (16,178), 564; (13,858), 444
Kishi, K. (14,826), 444
Kitson, A. (13,507), 364
Klopfenstein, J. (15,924), 564
Knowles, C. E. (4,729), 644
Krueger, M. C. (28,792), 684

LAGARDE, J. (16,939), 644
Laidlaw, W. R., and G. H. Scholes (11,395), 324
Lake, H. H. (18,229), 444; (16,905), (17,384), (17,385), (17,389), (18,228), (18,922), (18,926), (19,563), 644; (13,741), (13,748), (14,294), (14,295), (14,296), (14,146), 484; (14,141), (13,738), (13,740), (12,765), (12,766), (11,819), (11,821), (11,822), (11,844), 444; (12,292). (12,293), (12,083), (11,881), (11,829), (11,832), (11,883), (11,885), (11,837), 404; (14,404), 364; (13,438), 164; (2,249), 284; (9,441), 324; (12,764), (12,080), (11,843), 284; (11,842), (11,845), (12,078), (12,291), (12,294), (13,737), (13,742), (14,869), (15,846), (176,900), 524; (11,738), 1012; (4,271), 204; (11,839), (11,849), (11,850), (24,103), 324; (11,841), (11,836), (11,834), (11,840), (11,828), (11,827), 284; (4,274), 324; (11,824), (11,820), 284; (17,388), (17,687), 444; (11,814), 284; (11,816), (11,818), (11,840), (12,081), (11,815), 484; (12,958), 564; (17,386), (17,387), (18,923), 604; (16,939), (16,100), 1012; (19,572), 604; (12,958), (12,959), (13,739), (14,884), (15,347), (16,662), (16,063), (16,064), (16,925), (16,928), 564; (4,254), 284; (22,750), 40; (8,892), 244; (22,751), 80
Lambert, G. (2,700), (2,701), 284
Lancashire Dynamo and Motor Co. and R. S. McLeod (14,373), 444
Landon, J. (10,302), 604
Lavagne, L. (3,059), 284
Lawrence, J. (16,150), 364
Lebnet, A. (9,721), 40
Le Carbone, (4,254), 284; (4,274), 324
Leclerc, L. (5,412), 124
Leitner, H., (14,202), 604; (16,040), 564
Lemange, E. (24,260), 80
Levilles, Johnson H. (7,260), 604
Lewes & Kirke (2,184), 684
Limble, J. (2,568), 204
Little, G. W. G. (25,441), 204
Lloyd, W. J., and W. Priest (1,220), 604
Loche, F. M. (27,803), 80
Lodge, O. J. (10,181), 564
Lohner, L. (14,851), 524
Long Arm System Co. (16,748), 364
Loring, F. H. (3,751), 204
Lorringer, F. H. (17,341), 524
Lovelace, R. S. (9,865), 244
Lowdon, E. J. B. (13,840), 364
Lowendahl, V. (17,002), 164
Lucas, R. N. (16,492), 444; (16,040), 564; (14,202), 604
Lume, J. R. P. (2,492), 284
Lundell, R. (4,754), 644
Luthy, H. (17,924), 164
Lux, F. (493), 484

MACDONALD, F. W. (21,037), 204
Macfarlane, J. W. (24,033), 684
„ W. A. (19,842) 644
MacGillvray, H. (17,260), 164
McGillivray, H. (1,546), 404
McLellan, W. (6,730), 244
McNeill, D. R. (2,343), 284
McOuat, E. (4,755), 644
Macquisten, A. P. S. (15,226), 564
Maddox, E. E. (14,464), 444
Malam, J. (23,344), 1052
Malan, E. de M. (13,466), (13,468), 364
Maller, E. (21,294), 1012
Malmstrom, P. E. (9,899), 244
Mannel, E. R. (10,952), 404
Mannstadt, L. (20,324), 204
Manson, G. W. (15,315), 364
„ P. (14,538), 1012
Marconi, G., and Marconi's Wireless Telegraph Co. (10,245), 40
Mare, F. de (12,809), 404; (22,283), 644; (12,207), 604; (14,064), 364
Margowski, M. (13,378), 1012
Marichal, A. J. A. C (16,834), 564
Marnat, L. (15,325), 444
Marsh, T. H. (2,869), 284; (15,142), 824
Maschinen-fabrik Oerlikon (2,065), 284
Mason, C. T. (13,510), 864
„ J. F. (19,431), 604
Mathewson, T., and A. J. Fielding (17,057), 1012
Maxfield, A. P., and C. R. Garrard (14,527), 444
Medway, M. T. (12,846), 444
Meller, C. H. (15,271), 164
Mercier, M., and W. C. Andrews (12,817), 444
Meulemeester, E. de (697), 484
Meyer, H. S. (5,143), 40; (11,489), 284
„ J. H. (9,231), 324
Midgley, A. H. (10,335), 40
Miller, C. C. (12,865), 1012
„ J. A. (23,734), 80
Milles, G. C. (18,933), 644
Mills, B. J. B. (23,461), 684; (26,541), 204; (6,396) 40
„ C. W. (188), 1012
Mix & Genest (13,154), 324
Moberg, C. J. (17,611), 524
Moenninghoff, F. W. (4,134), 284
Mordey, W. M. (3,748), 80
Morrison, A., and J. W. Butterworth (17,683), 524
Moseler, A. R. (27,182), 444
Motta, J. Urrutia y (14,415), 364
Mould, J. T. (2,934), 284
Muirhead, A. (2,310), 444; (12,697), 564; (2,310), 284
Munro, E. M. (14,897), 534; (15,981), 564; (22,623), 684
„ J. (11,269), 404
Murray, T. B. (14,732), 484
Murphy, T. J. (18,336), 1012
Musso, G. S. (13,747), 364
Myers, M. J. (32,352), 1052

NALDER, F. W., and Nalder Bros. and Thompson (19,652), 204
National Rail and Tramway Appliances Co., and P. McCullough (14,374), 444
Neelemans, A. (14,952), 364
Nevill, H. (4,262), 284
Neville, R. R. (17,135), 564
Newgood, M. (27,096), 204
Newton, D. (13,308), 524
„ L. H., and R. R. F. Neville (17,135), 604; (17,136), 604
Nilson, L. G. (17,994), 40; (17,705), 40; (17,997), 40; (17,998), 40
Nisbett, G. H. (15,823), 564; (15,925), 564
Norden, A. (5,978), 604
North, S. W. (9,150), 324
Northey, P. W. (9,111), 324

O'CONNOR, J. J., and W. O. S. Hilditch (11,369), 644
O'Donnell, J. P. (5,032), 124
Oliver, C. (6,034), 124; (7,195), 604; (24,531), 1052
„ J. (8,414), 40
Oppenheimer, H. (13,914), 404; (15,154. 324; (5,057), 204
Oppermann, C. T. J. (9,315), 324
Orling, A. (21,706), 1052
Otis Elevator Co. (6,123), 124; 24,455, 324
Otto, R. (13,098), 1012; (914), 604
Owen, G. A. (13,501), 364

PACINOTTI, A. (9,441), 324
Page, G. (2,459), 284
Palmer, J. D. (2,498), 284
„ W. (20,237), 444
Parsons, L. H. (4,798), 124; (351), 604
Paterson, D. R. (2,701), 284
Paweck, H. (1 688), 404
Peard, O. L. (11,404), 324; (20,483), 644
Pearson, J. T. (5,725), 1012; (7,958), 244
Peck, J. S. (25,330), 204
Perkins, T. S. (1,874). 484
Phillips, A. (1,736), 404
Pichard, G. A. (12,516), 1012
Piddington, W. W. (22,551), 684
Pinckard, W. P. (14,404), 364
Place, J., & Sons and W. H. Place (3,279), 284
Pocklington, F. A. (4,648), 644
Points, J. W. (14,235), 864
Pompili, R. (2,830), 284
Poraun, F. (12,484), 1012
Porsche, F. (12,695), 304
Portillo, C (13,759), 604
Prochaska, F. (10,141), 564; (15,218), 1052
Punga, F. (4,180), 284
Purdom, W. A., J. W. Dawson, and Edmonson & Purdom, Ltd. (16,142), 564

RAILING, M., (1,435), 404
„ M., and J. H. Collings (13,082), 444
Rast, A. (1,313), 604
Rawlings, J. J., and W. R. (10,144), 124
Rennert, O. (25,748), (25,671), 204
Renny, F. J. and B. P. (8,488), 1012
Reversible Electric Car Sign Co., U.S.A. (22,750), 40; (22,751), 80
Reyrolle, A. C. (16,041), 644
Rigby, A. B. (3,584), 284
Rignon, J. A. (4,374), 324; (17,923), 164
Rinder, F. (13,061), 1012
Rivers, E. G. (19,128), 40
Roberts, S. (19,208), 644
Rohr, F. (10,938), 244
Rollo, W. J. (16,072), 644
Romain, A. (7,834), 244
Romanze, O. (11,101), 444
Roos, W. (15,337), (15,338), 1102
Rosenthal, S. A. (12,700), 484
Rosty, M. C. (20,739), 204
Rottenburg, L., and Paterson, Cooper and Co. (12,330), 444
Rudhardt, P. (15,336), 364
Runge, W. C. (10,889), 484

SACERDOTE, S. (26,334), 684
Salmony, H. M. (6,110), 1012
Savage, H. (16,969), 564
Sayer, E. (9,531), 244
„ R. C. (20,690), 364
Scharf, P. (1,528), 404
„ R. (24,249), 684
Schattner, E. (14,567), 564; (3,265), 284
Scholes, G. H. (11,395), 321
Schmid, A. (1,323), 604
Schmitt, P. (21,901), 1052
Schwabe, C. (14,819), 444
Scott, E. G. (2,584), 284
„ H. (10,271), 244
„ W. H. (11,844), 1012
Sedneff, C. de (15,807), 564
Seggel, H. (15,992), 1012
Sharman, A. W. (8,172), 564
Shawfield, C. E. C. (3,159), 284
Shuter, A. D. (7,958), 40
Siemens Bros. & Co. (16,450), 1012; (12,788), 564; (27,472), (28,012), 204; (4,357), 324; (1,136), 604; (8,748), 324; (3,608), 284; (4,633), (4,624), (10,341), (16,711), (17,794), (21,648), 544; (13,854), 604; (7,665), 244; (11,068), 324; (20,645), (22,106), (22,107), (22,108), 1052
Siemens & Halske A. G. (20,645), (22,106), (22,107), (22,108), 1052; (2,584), (3,608), (12,158), 284; (12,157), (12,160), (12,161), 324
Simon, P. F. W. (8,548), 244; (1,496), 404
Simplex Steel Conduit Co. (11,377), 404
Simpson, W. M. (11,516), 324
Singer, W. F. (19,072), 364
Skinner, E. (8,548), 244; (1,496), 404
Slack, R. (10,022), 244
Sloper, T. (4,793), 124
Smith, A. D. (3,116), 604
„ E. W. (14,276), 564
„ J. F. (25,175), 684
„ P. J. (14,466), 364
Soar, A. B. (1,104), 604
Société Electro-Metallurgique Francaise (14,576), 364
Soe, Radiquet and Massiot (22,180), 324
Solomon, M. (2,990), 284
Spalding, S. J. (2,248). 284
Sperryn, G. (7,420), 124
Spielter, W. (8,181), 604
Staedtefeld, P. (5,892), 1012
Stanley, E. (2,840), 284
Steins, P. (14,466), 364
Stern, P. K. (7,125), 604
Stewart, W. H., T. B. Turner, and R. E. Dixon (11,393), 404
„ W. N. (24,743), 444
Stiner, C. M. (10,878), 1012
Stock, H. B., and C. Mc de Bingham (13,572), 524
„ T. (28,170), (28,171), 324
Stockall, W. H. (13,872), 364
Stockmeyer, W. (10,733), 484
Stokes, F. W. S. (17,222), 444
Strutchbury, W. T. (1,984), 484
Stuart, H. R. (7,481), 1012
Stubbs, J. P. (14,477), 364
„ J. W. (10,204), 444
Sturmey, J. J. H. (12,218), 284
Sutherland, M., and E. Marcuson (15,747), 564
Sutton, J. H. (22,067), 1052
Swinburne, J. (2,990), 284

TABOULEWITSEH, W. (6,345), 124
Tangye Tool & Electric Co., (15,944), 324
Tangyes, Ltd., and J. Robson (18,009), 524
Tate, G. A., and F. E. Newberry (9,596), 1012
Teers, D. (23,594), 1052
Thomas, A. E. (7,536), 40
Thompson, W. P. (5,993), 1012; (5,952), 604; (15,350), 534; (6,306), (9,873), 244; (2,674), 284
Thomson, E. (2,264), 284
Thornton, W. M. (7,075), 124; (7,080), 244
Thorp, E. L. (13,560), 364
Threlfall, R. (2,987), 284
Timmins, J. A., and E. W. (14,109), 404
Townshend, E. (8,323), 244
Trippe, C. F. (11,177), 284
Trotter, A. P. (11,765), 524
Tunbridge, E. A. (7,337), 1012
Turnbull, C. (12,290), 444

UYTENBOGAART, J. W. H. (7,701), 1012

VANDAM, A. (2,860), 284; (15,142), 324
Vasmaer, A. (9,721), 40
Vellino, C. (15,963), 604
Venner, R. F. S (20,931), 644
Veritys, Ltd. (19,522), 40; (19,688), (19,689), 644
Vickers, Son & Maxim, Ltd. (14,774), 604
Viertel, H. (10,341), 644
Volkmann, A. (20,456), 204

WALDROM, J. (2,018), (2,019), 484
Walker, M. (18,870), 604
Walter, L. (17,111), 524
„ L. and P. (11,313), 644
„ W. H., and J. A. Ewing (21,462), 644
Walters, W. M. (13,924), 364
Wassilieff, A. (1,126), 604
Waterhouse, L. M. (11,725), 524; (11,377), 404
Waterman, L. G. (20,567), 644
Watkins C. D. (16,902), 604
Watson, E., and A. O. Benecke (12,476), 444
Waygood & Otis, Ltd. (24,455), 324
Weaver, T. E. (10,008), 124
Webb, F. W., and A. M. Thompson (27,090), 684
„ H. R. (13,491), 564
Weismann, G. (16,391), 564
Westinghouse Brake Co. (13,466), 364 (13,468), 364
Weston, E., and A. O. Benecke (12,469) 644; (12,409), 524
Wetmore, E. P. (2,159), 284; (360), 604
Wetter, J. (28,353), 684
Whipple, R. S. (918), 604
White, E. (2,018), (2,019), 484
White, W. (10,938), 244
Whiton, M. T. (2,828). 80
Wilderman, M. (9,803), 324
Wilkinson, G. (2,084), 284
Wilson, D. H. (27,720), 444
„ G. E. (2,987), 284
„ J. G. (7,655), 244
„ L. (21,019), 40
Winert, K. (13,545), 564
Winship, W. E. (12,857), 40
Wise, W. L. (9,815), 444; (2,965), 284 (20,683), 204
Wolsey Tool and Motor-Car Co. and H. Austin (20,445), 644
Woolliscroft, J. H. (5,812), 40
Wormersley, G. W. (993), 604
Wright, A. (26,863), 444
Wust-Kunz, C. (13,282), 1012
Wyatt, F. (1,417), 404

YATES, H. J. (2,043), 284
Yerbury, H. E. (16,712), 364
Yost Miller Co. (4,235), 324
Yurgas Signalphone Manufacturing Co. (3,248), 284

ZEHDEN, A. (16,740), 444
Zerkowitz, O. (10,533), 484

1903.

AGUIRRE, A. P. (2,491), 804
Allen, W. H., Son & Co. (13,305), 764
Aron, H. (14,979, 14,980), 888

BARKER, C. (9,664), 724
Barham, C. J. (1,948), 804
Barnett, T. (10,100), 764
Bart, J. (4,709), (5,020), 484
Barrolier, J. (16,456), 888
Bastie, P. H. (11,761), 764
Bayliss, F. W. (2,239), 972
Benecke, A. O. (4,444), 972
Birch, G. (9,353), 764
Birkbeck, H. (9,149), 764
Birnbaum, I. B. (134), 804
Blondel, H. (6,061), 484; (11,193), 764
Bloxam, A. G. (10,429), 764
Bodniec, G. (3,845), 844
Boult, A. J. (1,178). 804; (8,056), 684
Boyden, T. L. (3,980), 844
Brandes, W. (4,311), 404
Brandt. P. (14,021), 764
Brebach, R. (7,107), 684
Breger, C. (16,808), 888
Brown, R. W. (3,067), 804
„ W. M. (10,546), 764; (330), 804
Browne, J. R. (2,239), 972
Bulbeck, H. C. (1,948), 804
Burk, C. G. (15,552), 888

CAPELL, J. (13,281), 764
Carey, R. F. (2,483), 972
Carlsson, C. H. (5,698), 972
Carrere, J. M. (10,194), 764
Chaplin, A. (3,420), 972
Charron, F. (1,598), 804
Clement, E. E. (2,598), 844
Cleynenbrengal, J. V. (1,911), 804
Compagnie Generale d'Electricité (258 972
Cottrell, H. (4,868, 4,869), 404
Curphey, A. G. (267), 804
Cushman, A. L. (8,021), 684

DAGGETT, W. A. (9,115), 764
Danziger, M. (1,514), 804
Darge, J. (10,100), 764
Devonshire, T. E. (346), 972
Dorman, C. M., and R. A. Smith (15,268), 888
„ C. M., R. A. Smith, and H. G. Baggs (15,870), 888
Downes, A. J. (5,806), 972
Drecker, R. (7,997), 684
Dube, J. E. (8,480), 724

EDWARDS, J. D. (2,644), 804
Edwards, J. W. (16,061), 888
Evans, W. E. (7,713), 684 (8,822), 724; (9,125, 11,826, 12,119), 764 (16,130), 888

FAIRBURN, H. W. (5,545. G.E. Co., 972
Fairweather, W. (4,410), 972

Fouet, A. (1,516), 804
Fontaine, H. (1,921), 804
Fuller, J. C. and G. (18,586), 928

GALLSWORTHY (9,029), 764
Gardiner, G. (7,184), 684
Gibbs, G. (11,591, 13,176), 764
Gin, G. (964), 804
Goddard, W. R. (4,089), 844
Goodson, G. A. (6,952, 6,953), 484
Gore, F. W. (8,512), 724
Grouselle, C. E. (12,629), 764

HADDAN, H. J. (1,433), 804
Hall, R. A. (15,552), 888
Harrison, G. (10,703), 764
" T. (8,921), 844
Haydon, W. (3,178), 844
Hearson, T. A. (16,809), 888
Heinrich, M. and E. (8,321), 724
Hewitt, P. C. (9,206), 764; (4,168), 972
Heys, W. E. (157), 804; (4,206), 404
" W. G. (8,010) 684
Hogge, H. (16,456), 888
Hunt, W. (1,634), 804

INNES-BAILLIE, C., (1,948), 804
Irving, E. C. (3,078), 844

JACOBSON, A. I. (5,081), 484
Jensen, P. (4,083), 844
Jestor, F. (3,453), 844
Johnson-Lundell Electric Traction Co. (2,564), 844
" W. A. (6,106), 484
Joseph, E. L. (7,184), 684
Justice, P. M. (15,479, 15,480), 888

KANDO, C. de (3,989), 844
Kingsland, W. (2,774), 844
Kleinschmidt, H. F. A. (15,834), 888
Knipping, E. (2,976), 972
Kollerich, L. von (5,448), 972
Koytra, M. (5,783), 972; (15,065), 888
Krieger, L. (8,778), 764
Kruckl, F. (17,184), 188
Kuchinka, A. (12,982), 764
Kusebach, A. (6,366), 484

LADD, H. W. (15,569), 888
Lake, H. H. (10,298, 12,099), 764; (425, 2,403), 804
Landsberger, A. (1,227), 804
Langdon, W. E. (18,566), 928
La Rocbe, F. A. (2,547), 804
Lauer, F. (582), 804
Le Pontois, L. J. (1,320), 804
Lilienfield, M. (3,698) 844
Lind, A. L. (5,698), 972
" A. A. (11,426), 764
Lindquist, D. L. (14,558), 764
Loewenstein, H. (8,658), 724
Lundberg, A. P. and C. C. (2,251), 804
Lundell, R. (5,314), 484

McDEVITT, W. (15,623), 888
McDonnell, G. P. (3,719), 972
McDowall, J., and Sons (5,030), 484
Macku, C. (18,453), 928
Manouvrier, V. E. (12,629), 764
Marks, G. C. (1,335), 804
Megros, A. (11,634), 764
Mismahl, F. (162), 972
Moore, E. S. W. (6,098), 484
Moy, E. F. (11,761), 764
Muller, E. (8,900), 764
Musso, G. (3,695), 844

NELSON, J. (5,125), 972
Nemelka, L. (8,584), 724
Neuberg, E. (14,940), 888
Newell, F. C. (6,300), 484; (14,176), 764
Newton, P. A. (834), 804
Norres, W. (4,735), 484

OAKLEY, W. E. (3,167), 972
O'Donnell, J. P. (3,073), 844
Oliver, H. (1,529), 972
Oesterreicher, A. (8,584), 724

PAGE, S. E. (11,698), 764
Pearson, H. (13,176), 764
Peck, J. S. (6,288), 484
Penny, J. A. (9,372), 764
Peters, G. A. (7,980) 684
Philpot, G. J. (1,529), 972
Piltz, G. B. T. (14,204), 764
Piquer, H. (4,234), 404
Prince, C. O. (8,745), 844
Proeger, R. (8,321), 724

RANSFORD, R. B. (3,072, 3,073, 3,074, 3,183). 844
Regnart, C. C. (14,754), 844
Reid, J. H. (1,670), 804
Richmond, J. (2,483), 972
Rignon, J. A. (3,198), 844
Rose, J., and Rose, Coop & Rissone, Ltd. (12,563), 764

SCHIEL, J. (5,693), 972
Schlutius, J. (2,199) 804
Schoenberg, M. H. (16,061), 888
Schubert, B. F. (12,203), 764
Schwenke, P. (12,963), 764
Sheehy, R. J. (267), 804
Siemens Bros. & Co. (4,836, 6,740, 6,742), 484; (9,015), 764; (1,990, 2,502), 804
" and Halske (689), 972
Skirmay, I. (5,448), 972
Smith, G. C. (3,921), 844
Swan, R. J. J. (459), 804

THEILER & Co. (3,274), 844
Thiel, G. (1,828), 804
Thompson, W. P. (188), 804; (18,376), (15,506), 888
Thorn, C. H. R. (2,993), 804
Trub, R., & Co. (8,329), 724

URRY, F. H. (3,178), 844
Utenbogaart, J. W. (7,700), 684

VARLEY, T. W. (6,833), 484

WADE (12,485), 928
Watkins, W. D. (4,823), 404
Weston, E. (4,444), 972
Wetmore, E. P. (10,546), 764
Wherry, W. H. (12,458, 12,461), 764
White, E., and J. Waldron (17,564), 888
Whittingham, G. H. (1,032), 972
Wilke, J. A. (2,544), 804
Wilkinson, J. W. (1,006), 804
Wille, A. R. L. (18,953), 928
Williams, B. D. (7,530), 684
Withers, J. S. (10,518, 10,519), 764

YAR, S. (3,964), 764

ZIEGENBERG, R. (8,497), 724